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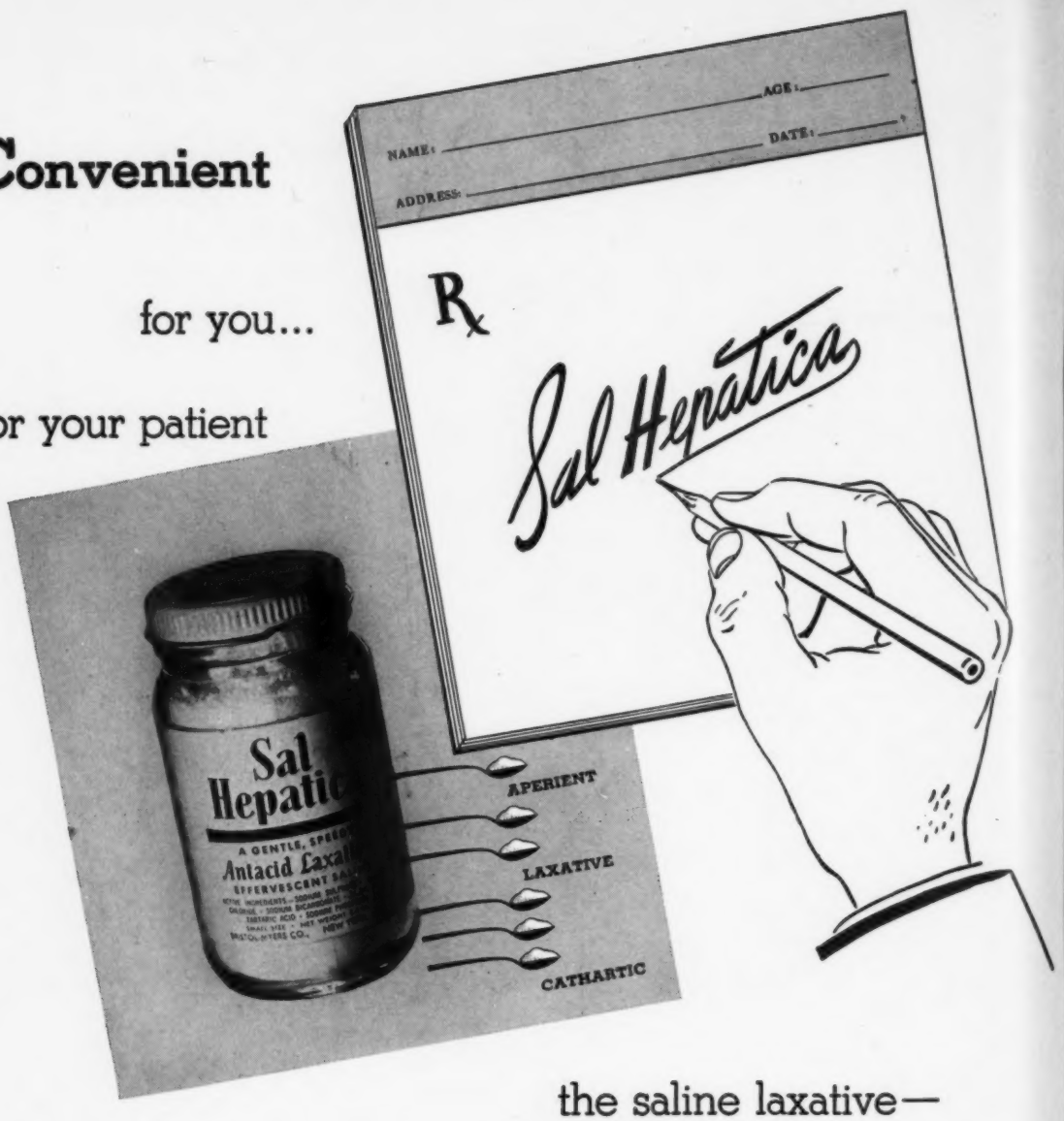

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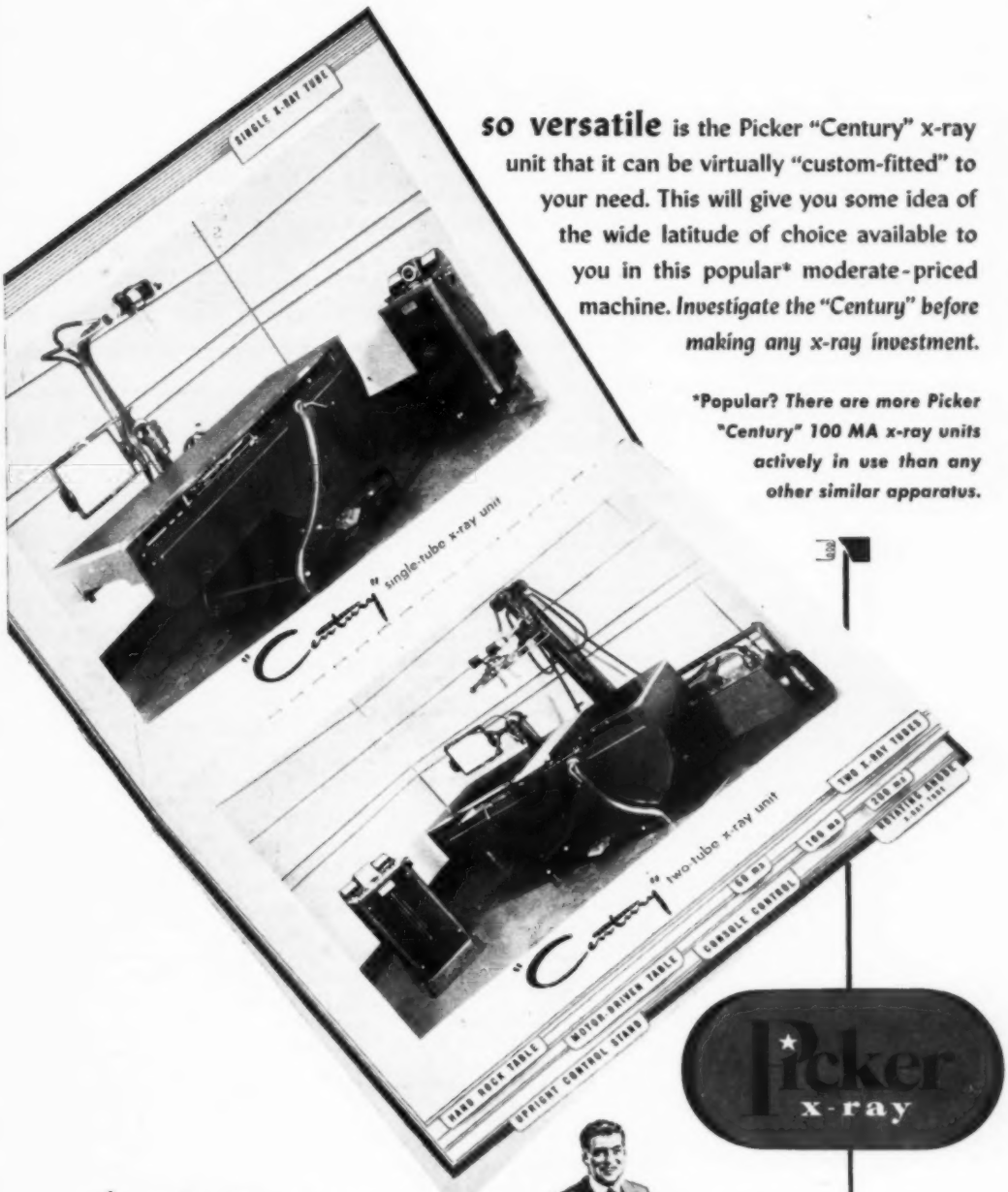

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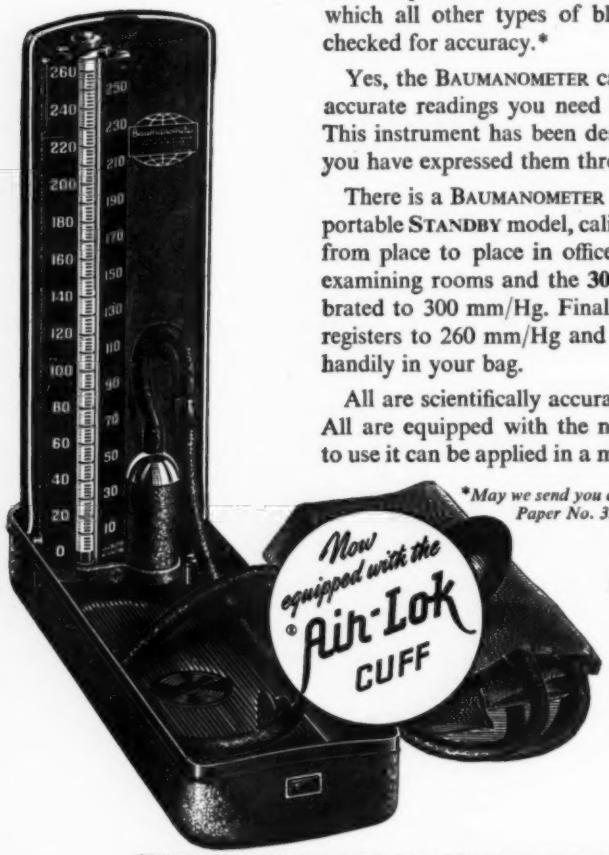

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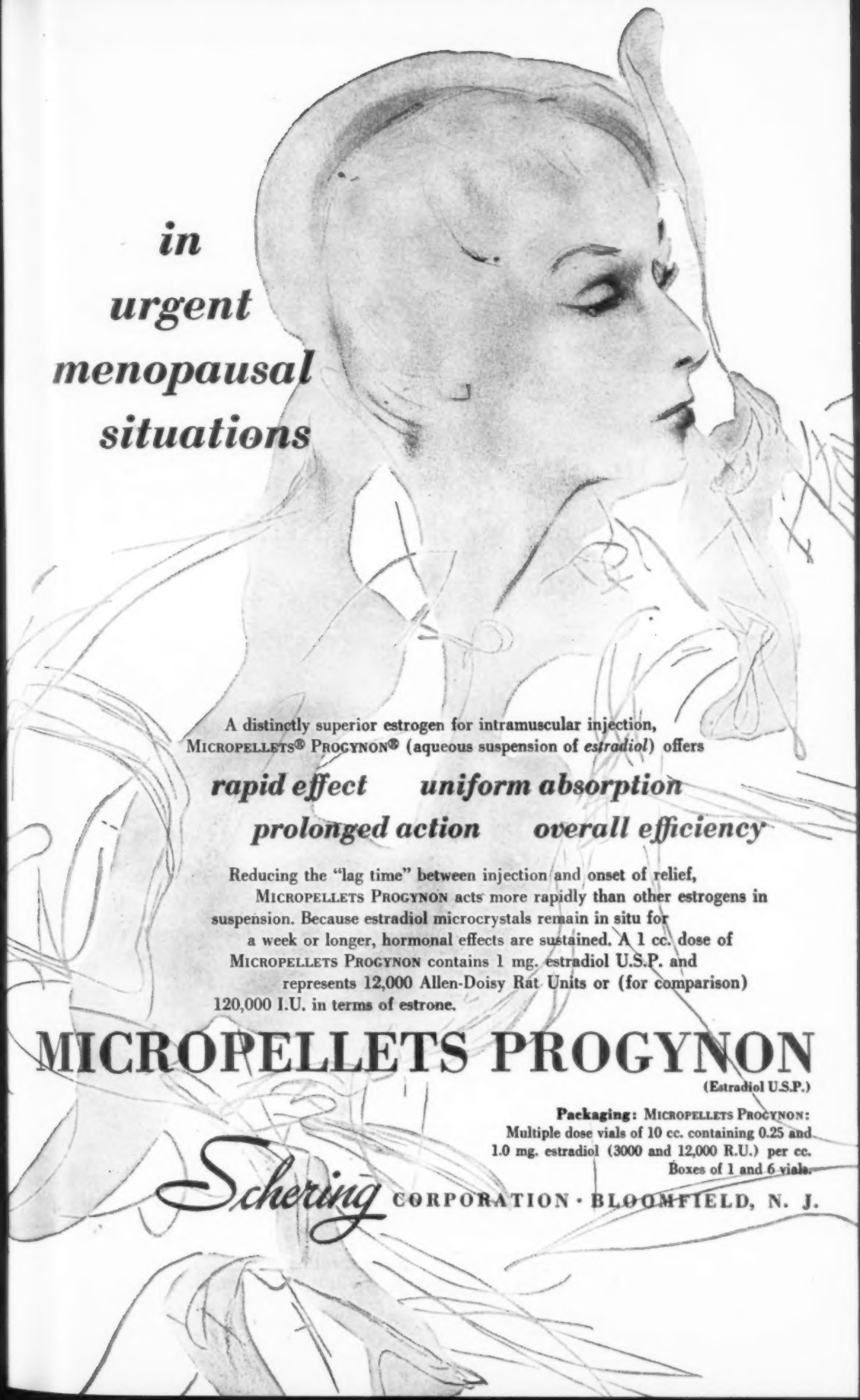

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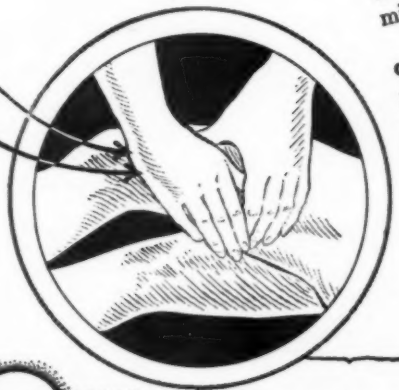

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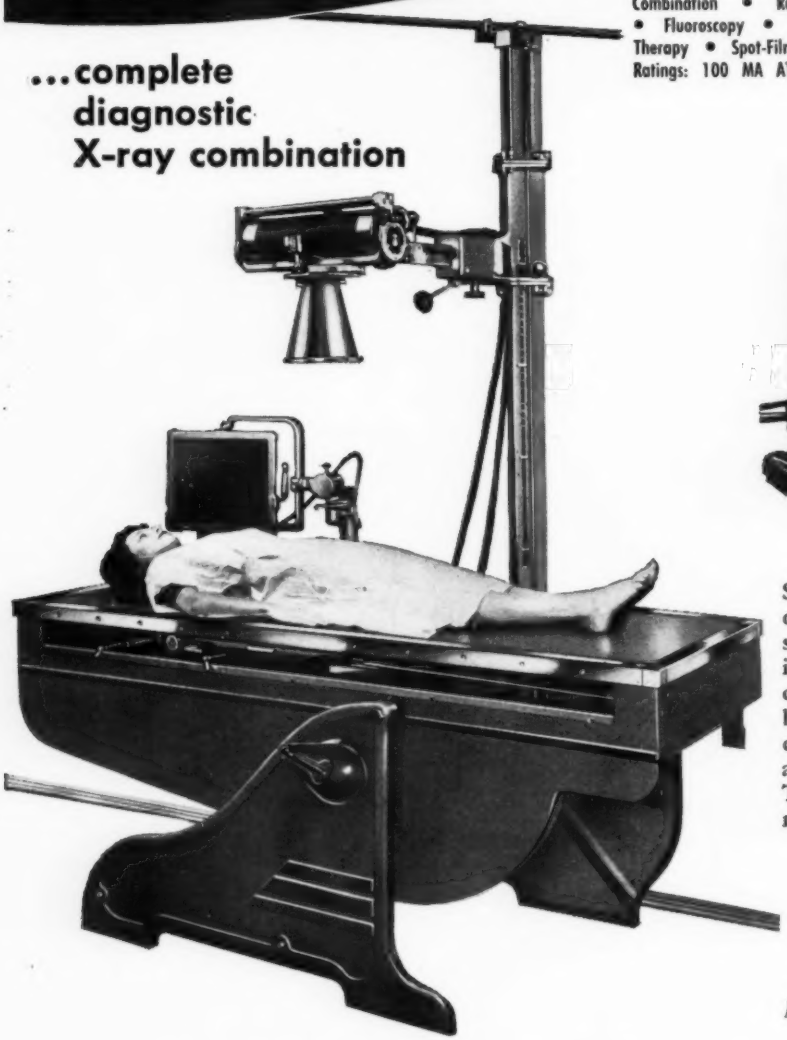

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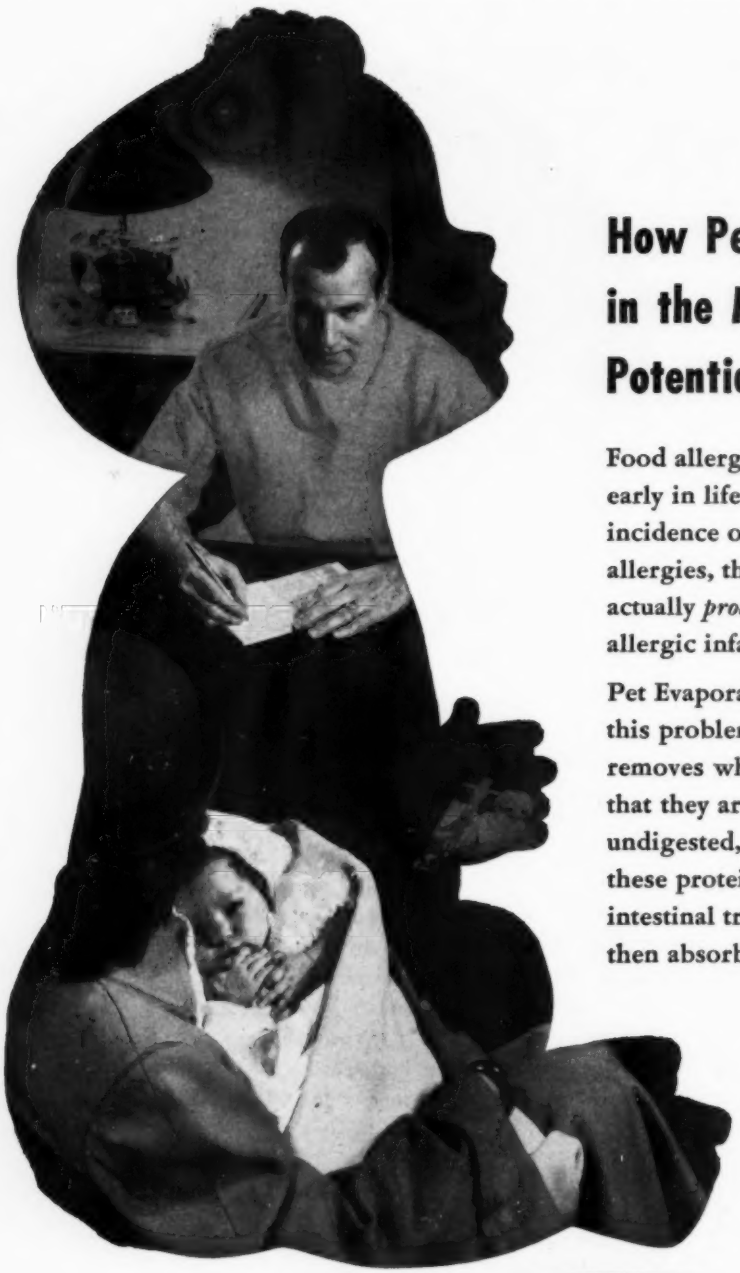

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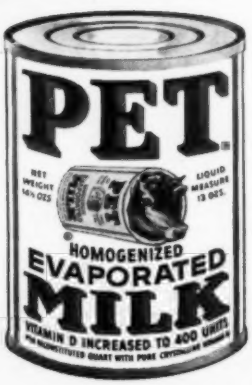

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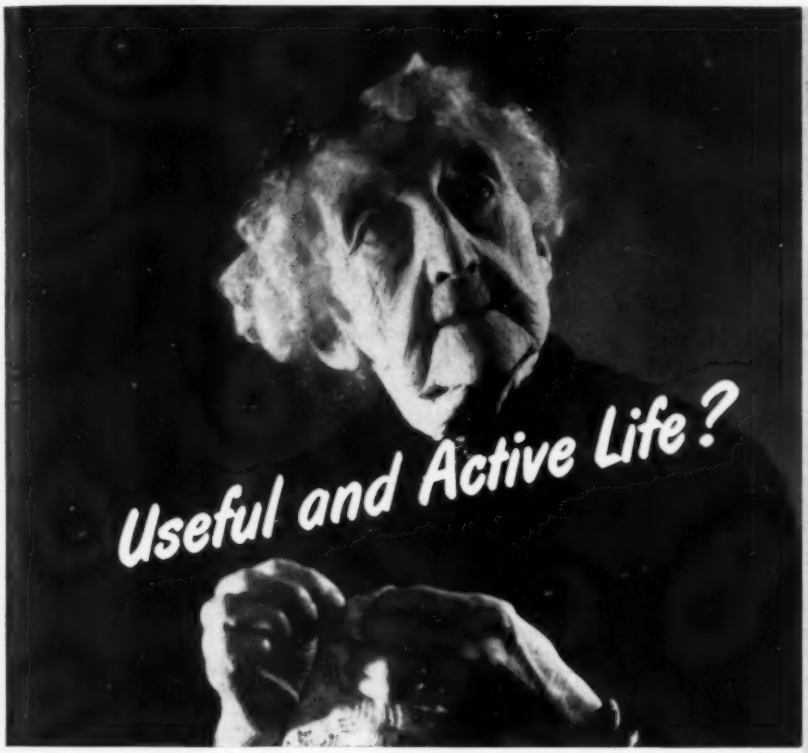

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1. McLester, J. S.: Diet in Health—The Normal Diet, Nutrition and Diet in Health and Disease, p. 256, W. B. Saunders Co., Philadelphia, 1948.
2. Ibid.

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WITH 53 CONTRIBUTORS

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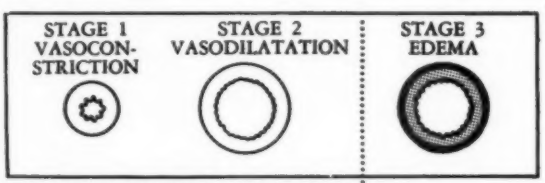
Although the cause of migraine is still unknown, the mechanism productive of head pain has been determined.[2] Today, it has been observed that the head pain in classical migraine and related disorders is produced through abnormal behavior of the cranial vascular system. The affected arteries, principally branches of the external carotids, become constricted in the early stage of the attack. Such vasoconstriction results in pre-headache warning signs such as visual and other sensory disturbances. Later in the attack, these arteries become relaxed and dilated. *At this point, agonizing headache begins.* Exaggerated pulsations and thickening of the affected arterial walls cause stretching of and



BEST RESULTS WITH TREATMENT IN STAGE 1 OR EARLY STAGE 2

pressure upon adjacent pain-sensitive structures. Headaches of this type may last for a few minutes only or they may last for days. Seizures are usually terminated by severe vomiting.

As a result of recent research, these headaches can be aborted for the great majority of sufferers. *Attention has been centered on the development of an effective oral preparation to relieve vascular headaches. Cafergone.* (100 mg. caffeine and 1 mg. ergotamine tartrate per tablet) *is the result of this research.* Ergotamine tartrate (Gynergen) has long been known as a potent vasoconstrictor.[3, 4] Caffeine, when administered orally, also acts as a vasoconstrictor.[5] Simultaneous administration of ergotamine tartrate with caffeine in Cafergone tablets has the added advantage of reducing the usual dose of ergotamine necessary to abort these headaches.[4]

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4. Give 2 Cafergone tablets at first sign of impending attack and, if necessary additional 1-tablet doses (up to 6) at half-hour intervals.

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Literature available on request, for further particulars on *Dosage Adjustment* and other points:

Reprints of recent reports.
Therapeutic brochures.
Chart, "Clinical Characteristics of Vascular Headaches."

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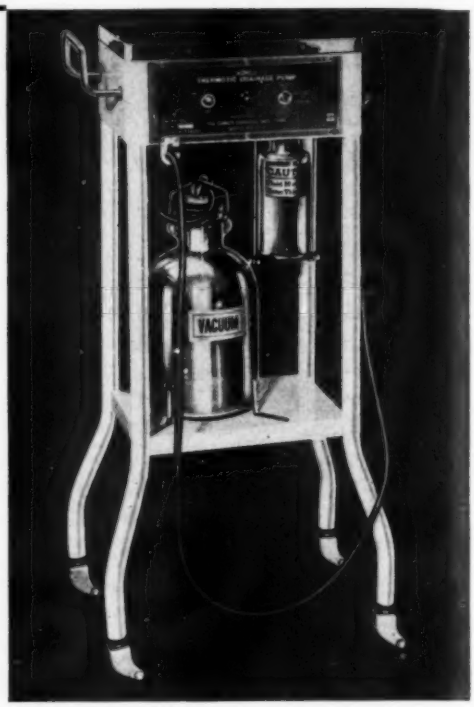

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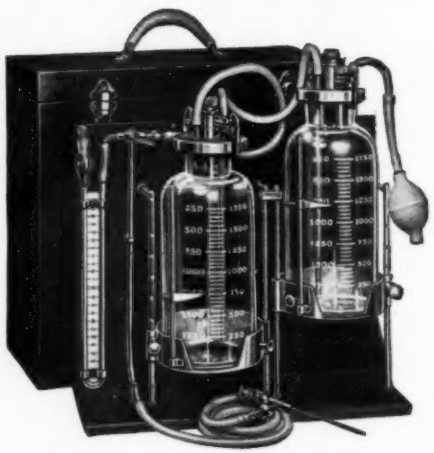

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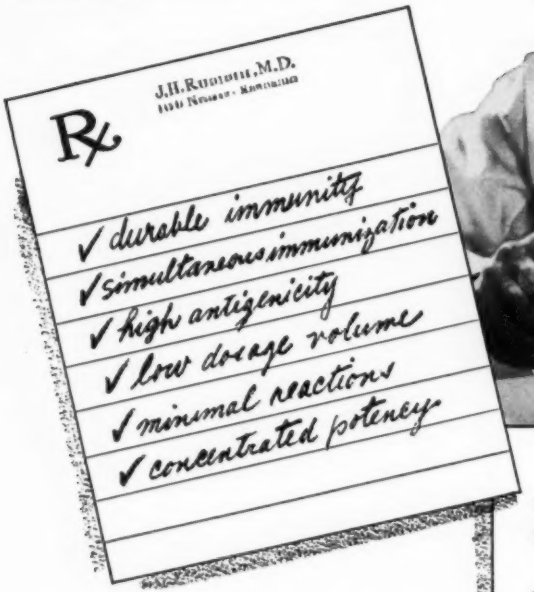

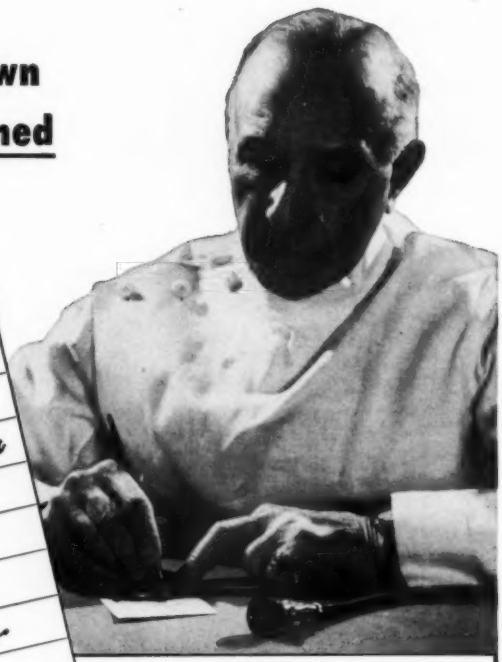

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A Review of the Short-Leg Problem

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INTRODUCTION

A critical survey of the available information on a subject is profitable both to the writer and to the reader. The present review of the short-leg problem is an attempt to integrate the mass of information that has been published on this subject. The writer hopes that this paper will serve not only to clarify this syndrome but also to provide an impetus for further research on the short-leg problem.

When a difference is observed in the length of the two legs, the shorter of the two is referred to as the "short leg." The term "anatomical short leg" has been defined by Bailey and Beckwith[1] as that leg which is actually shorter in length from the floor to the weight-bearing surface of the femoral head. The associated postural problems and their clinical manifestations may properly be termed the "short-leg syndrome."

References to the existence of inequalities of leg length in man have appeared in medical literature since the latter half of the nineteenth century. However, the importance of this clinical entity in respect to posture has achieved general recognition only within the last decade.

The earliest reference to differences in leg length appeared in a paper by Hilton[2] in 1862 in which he described the condition of a congenital deficiency in the development of one leg. Hunt[3] in 1879 observed that symmetry of the lower limbs was quite exceptional. Cox[4] found that only 6 out of 54 persons examined had equal leg length. Only 1 person in 5 was found to have equal leg length in Wight's studies reported by Tubby.[5] Furthermore, the differences in leg length were estimated to be from ⅛ to 1 inch. In 1879 Garson[6] measured 70 skeletons and concluded that lower limbs were equal in only 10 per cent. The contents of Table I consist of data on scoliosis and short leg compiled by Lovett.[7] Schwab[8] notes that x-ray photographs of the mummies in the Field Museum of Chicago show that inequalities in the length of the lower extremities existed in ancient Egypt.

The investigation of the short-leg syndrome gained considerable impetus through the introduction of the standing postural x-ray by Hoskins and Schwab in 1921.[9,10] In recent years a great deal of information has been presented on the orthopedic aspect of differences in leg length and the related subject of leg growth. An excellent article on the estimation of leg growth in children has been prepared by Gill and Abbott.[11]

TABLE I—SCOLIOSIS AND LEG LENGTH*

Investigator	Cases of Scoliosis	Leg Length
Sklifowsowsky	21	17 right longer
Staffel	230	62 left shorter
Taylor	32	28 shorter on one side
Lorenz	100 (lumbar)	1 case of shortening
Dolega	200	2 cases of shortening

*Data compiled by Lovett.[7]

ETIOLOGY

Many etiological factors concerned in the development of differences in leg length are postulated. Some of these factors are obvious since they are directly related to bone growth or leg length. Other postulated causes are still cloaked in the obscurity of clinical supposition. The relative importance of many of these etiological factors on leg length remains to be studied.

Schwab[12] has presented the best classification of etiological factors in the development of short leg. His classification (Table II) is based upon the study of 345 cases which showed x-ray differences of 0.5 cm. or more in leg length. Additional factors that have been mentioned by other authors include poliomyelitis,[13] psoas spasm,[14,15] structural defects, and flat feet.[16]

TABLE II—CLASSIFICATION OF THE ETIOLOGICAL FACTORS IN THE DEVELOPMENT OF SHORT LEG BY SCHWAB

Etiological Factor	Cases	Per Cent
Unequal development	183	53
Fracture with shortening	36	11
Epiphyseal irritation with lengthening	27	8
Fracture with lengthening	25	7
Dislocation of articulation	9	3
Sacral or innominate deformity	9	3
Unilateral coxa vara	8	2.4
Weak foot with diminished support	5	1
Postsurgical shortening	5	1
Epiphyseal injury before maturity	4	1
Arthritis	4	1
Perthes' or Legg's disease	2	0.5
Miscellaneous	28	8

Numerous references have been made to the importance of the foot in relation to leg length.[13,16-18] Beal and Grant[19] found that there was a low talus in 52 out of 100 cases of short leg. Nineteen of these cases had a low talus on the same side as the short

leg. Eight out of 10 cases observed in this series showed a pronated foot associated with low talus. Kerr and his associates[20] found that unilateral low arch was present in 17 per cent of cases in their series. Of those with one low arch, 65 per cent had a short leg on the same side; the remaining 35 per cent had a short leg on the opposite side from the low arch. Swift[21] took x-rays of the feet along with some of her structural x-rays. She found anomalous development in 30 cases or 97 per cent of those studied. The most frequent anomaly of development observed was a short first metatarsal with displacement of the sesamoids of the first metatarsal segment. She contends that this condition has a definite bearing in weight distribution and that abnormalities of the feet in turn have considerable influence in weight distribution in relation to the midmalleolar line. Thus defects in the feet can produce relative changes in the x-ray appearance of the leg length as seen in a standing picture.

X-rays of the knees with the patient standing have disclosed differences in knee height. Beal[22] found differences ranging from 0.1 to 0.9 cm. at the height of the tibial table in 16 cases studied. Five cases had differences of 0.4 cm. or greater; in each the short leg was on the same side as the short knee (Table III). Although x-rays of the talus height in these cases were not taken, it is apparent that differences in leg length occur at both the height of the ankle and the knee which in some cases partially or entirely explain the differences in leg length observed at the femoral head.

TABLE III—X-RAY DIFFERENCES IN KNEE HEIGHT

Subject	Short Leg	Short Knee
Sa	Rt. 1.2 cm.	Rt. 0.7 cm.
Jo	Rt. 1.0 cm.	Rt. 0.7 cm.
Ca	Rt. 1.3 cm.	Rt. 0.9 cm.
Si	Rt. 1.2 cm.	Rt. 0.4 cm.
Ha	Rt. 1.0 cm.	Rt. 0.4 cm.

DIAGNOSIS

The diagnosis of short leg is made on the basis of the patient's history and physical, structural, and osteopathic examinations. The diagnosis is confirmed by laboratory and roentgenological findings.

The most common history that a patient with a short leg presents is a story of recurrent backache which may have been precipitated by trauma or strain. Chronicity or recurrence is the outstanding feature of the history. Many patients complain of a low-grade ache or strain which is interspersed with episodes of acute distress. A clue to the existence of a short-leg problem is often elicited from a history of previous attacks of backache which have received only temporary relief from osteopathic manipulative treatment. The precipitating factor of the backache may be strain, trauma, childbirth, hospitalization, or illness. The latter factors appear to operate by a weakening of the body's compensation mechanism to the short-leg problem through a loss of muscular tone. Fatigue, neuralgia, myalgias, intercostal neuralgias, brachial neuralgias, cephalalgia, and other aches and pains from head to foot may be presented as isolated symptoms or in conjunction with the complaint of backache.

Gross differences in leg length are characterized by a particular type of gait which is apparent on physical examination. Pearson[23] states that the majority of cases showing ¼ to ½ inch differences will exhibit a characteristic sway or position of the body as the patient walks, a low side in locomotion.

One of the oldest orthopedic tests used to determine leg length is that of comparing the actual length of the two legs with a tape measure. The distance from the anterior superior iliac spines to the medul malleoli is measured with the patient in the supine position.

A somewhat comparable method used is that of estimating the relative length of the legs by comparing similar points at the malleoli. The patient lies in a supine position. The pelvis is examined to see that the patient is lying flat and straight on the table. The feet are then clasped and an upward thrust is made on them as if to thrust the heads of the femurs into the hip sockets. The relative position of similar points at the respective malleoli are then examined to see if any differences exist. If a difference is present, the leg showing the more proximal point at the malleoli is considered to be the short leg.

Lovett[24] stated that this method is inexact and recommended that a more reliable index can be obtained by measuring the anterior superior iliac spines with the patient standing. French[25] cautions the observer to ascertain that the knees are in extension. He advocates that the observer's hands should be pressed against the notch at the lower border of the anterosuperior iliac spine when judging the leg length. The actual amount of shortening may be roughly measured by placing thin blocks of known thickness under the foot of the shorter leg until the pelvis is level. Lovett states that even this determination is inaccurate on account of the frequency of the asymmetry of the pelvis.

Pearson[26] states that this test gives an error of about 55 per cent in contrast to the test used by Schwab which checks about 95 per cent with the standing x-rays. Schwab's[27] clinical test for short leg consists of having the patient stand with his heels together and his knees extended. The examiner stands or crouches behind the patient and extends both arms and places his extended forefingers upon the crests of the two ilia of the patient. The physician works at arm's length from the patient in order to obtain good perspective. The eyes should be on a level with the hands. The fingers are placed at the small level part of the crests of the ilia near the posterior superior spines, approximately below the transverse processes of the fourth lumbar vertebra. Differences in the relative height of the observer's forefingers are indicative of differences in leg length. The value of the procedure is often augmented by a similar measurement at the height of the greater trochanters. Care is taken to select comparable points and the forefingers are positioned in a similar manner to that used in the measurement of the iliac crests. The subject is then requested to bend forward, flexing the trunk upon the thighs as far as possible without bending or flexing the knees. When an actual short leg is present, the posterior surface of the sacrum below the posterior inferior iliac spine will be seen upon inspection to be lower on the side of the short leg (Fig. 1).

According to Pearson this test is the most accurate of all the inspection or measuring methods in the determination of inequalities in leg length. Considerable x-ray evidence confirms the reliability of this procedure. Pearson[23] found only 2 cases out of 135 cases of short leg which did not show a lowering of the iliac crests on the same side of practically the same amount as the difference in leg length. The x-ray studies of Bailey and Beckwith[1] showed a correlation of low iliac crests and short leg in 88 per

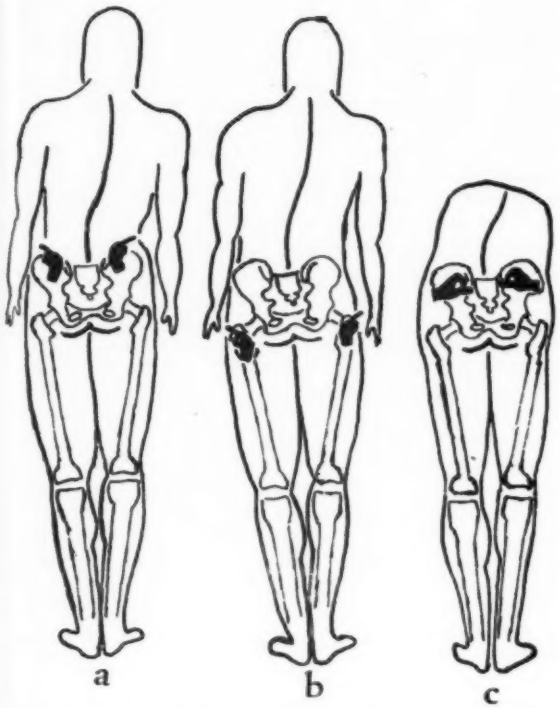


Fig. 1. Clinical examination for short leg. a. Forefingers at the iliac crests. b. Forefingers at the greater trochanters. c. Examining sacrum.

cent of the cases. The iliac crests were low on the long leg side in 7 per cent of the cases, and the remaining 5 per cent of the cases had no difference in the height of the iliac crests. The sacrum was observed to be tilted to the short leg side in 72 per cent of the cases.

Kerr and his associates[20] found that the palpatory method of checking the iliac crests and the trochanters for differences in height as an indication of short leg was inaccurate in cases showing x-ray differences of less than 1 cm., but that differences in leg length of 1 cm. or more could be detected with great accuracy. This would indicate that the palpatory findings are an indication of short leg but are not to be relied upon for accurate measurement of differences in leg length of less than 1 cm. Du Bois[28] reached a similar conclusion after a study of the relation of certain contour points with skeletal asymmetries. He concluded that contour asymmetries at best will only serve as an indication of what skeletal asymmetries may be found. They will not predict accurately what skeletal asymmetries do exist.

Judovich and Bates[13] consider the examination of the iliac crests as a rough test. However, they believe that the comparison of the relative height of the gluteal muscles is of value. The gluteal fold will be relatively lower on the side of the short leg.

Thus physical diagnosis offers several examinations for the evaluation of the short-leg syndrome—disturbances in gait, differences in the height of the iliac crests, differences in the height of the trochanters, differences in the height of the gluteal creases, and disturbances in the tilt of the sacrum, all of which may give a clue to the presence of a short leg.

Photographic studies have been used by Edmiston[29] and McVicker.[30] McVicker states that postural photographs are of particular value in convincing the patient of the necessity for roentgenography. He gives a technic for anteroposterior and lateral photographs.

X-ray technics have contributed a great deal to the study of the short-leg syndrome. A number of technics have been devised to increase the accuracy of the determination for leg length. Other technics have been adopted for the study of the postural effects of short leg. For purposes of discussion the technics may be divided into two groups, those designed to measure the length of the leg with great accuracy in which the subject is x-rayed in the supine position and those designed to study leg length and its related postural effects. The latter x-rays are taken with the patient in the standing position.

Bamberger and Zeitter[31] reported a method for measuring leg length with the patient supine. The measurements are made by the use of two meter rods with adjustable clips which may be set at the greater trochanters and at the fibular malleolus. Four small films are placed under the femur heads and the malleoli and exposed.

White[32] places his patient in a supine position with his feet against a translucent glass foot board. The patient grasps the sides of the table to thrust his feet against the foot board. An x-ray of the pelvis is taken. Differences in leg length are determined by measuring the distance between perpendicular tangents drawn from the proximal ends of the femur heads to the vertical coordinate of the x-ray plate.

Green, Wyatt, and Anderson[33] measured the lower extremity by the use of a continuous x-ray film and three exposures. The central ray was directed successively over the ankle, knee, and hip. The authors feel that this cuts down on the distortion caused by magnification.

Gill and Abbott[11] have further refined this technic by the method of slit scanography. The x-ray tube is covered by a lead mask with a transverse slit 2 mm. wide. During a lengthened exposure the tube is slowly moved the length of the bone to be measured at a rate of about 36 inches per 10 seconds. This results in a good film with exact length of the bones.

The standing technics date principally from the introduction of the standing postural film by Schwab and Hoskins[9] in 1921. Judovich and Bates[13] have improved on Lovett's[24] physical method of determining short leg by employing the clinical refinement of fluoroscopy. The patient stands facing a fluoroscopic screen which has been fixed with a water level attached to the frame. A wire, attached to the screen so that each end is equidistant from the floor, is lined across the iliac crests. If the crests are even, the wire will be seen at equal levels on both sides. If one side is low, lifts are placed under the heel until the lateral tilt is straightened. This technic may have the obvious clinical value of determining the amount of lift necessary to level the pelvis at the time of the examination but it does not give the physician a permanent record for reference during the course of treatment. Besides, the amount of lift needed to level the pelvis at fluoroscopy is not necessarily the correct therapeutic amount of lift for the patient. A permanent visual record is also of psychological value in discussing the problem with the patient.

Since its inception the standing film has become an important diagnostic tool in the study of postural problems. Unfortunately, as Clybourne[34] pointed out,

there has been no standardization of the technic for the standing postural x-ray. Most x-ray departments have adopted a technic based upon that first used by Hoskins[35] which has been described by Beilke.[9] However, many modifications have appeared. Many roentgenologists have incorporated alterations in the belief that the resultant picture is more desirable for the referring physician. Some of these innovations are undoubtedly of a constructive nature and add to the usefulness of the x-ray study, but other modifications have been introduced which have changed the whole character of the x-ray study and have detracted from its value.

The need for a universally adopted technic is paramount. Not only does research require a standardization of the x-ray technic, but also the less exacting clinical field demands a standardized procedure for proper clinical evaluation of the short-leg syndrome and its treatment. The significance of the x-ray is of value to the physician only insofar as the results may be judged in respect to the method employed in its production. The treatment of short-leg cases with lift therapy and the subsequent evaluation of the patient's progress by recheck films require a standardized method. Unless the procedure is rigidly standardized, such recheck films offer little information to the physician with which to judge his therapy.

Many physicians who constantly use the standing films do not know the method in which they are taken. Some have never even observed the procedure of taking a postural x-ray. It should be evident that the best interpretation of the films can be achieved only by first having a clear understanding of the technic used in their production.

The patient is the greatest source of error in the technic of taking a standing x-ray. The positioning of the patient is made difficult because the patient is standing and his body is subject to constant sway. The first step in positioning the patient is that of placing his feet in relation to a center line on the floor which corresponds to the mid-line of the upright x-ray table or standing wall Bucky. The patient stands in his stocking feet on the floor or on a level platform. His heels are placed a couple of inches out from the table. Several methods are in use in positioning the patient's feet in relation to the center line or midmalleolar line. The feet may be placed so that the internal malleoli are in contact with each other or the feet may be placed so that the heels are equidistant from the center line. Bailey and Beckwith[1] place the feet parallel to the center line or allow them to be placed so that they form equal angles with it. They found that an angle of about 20 degrees for each foot gave the patient the greatest feeling of stability. Hellebrandt and Fries[36] concluded from research studies of oscillogram postural sway patterns that the position with the least postural sway is obtained with the feet angled at 45 degrees.

After the feet are positioned, the patient is requested to stand erect with his weight balanced equally upon both feet. The x-ray technician makes certain that the subject's knees are extended and that both heels are on the floor. The patient's arms should be at his sides. The head and shoulders assume an easy position with the eyes fixed on an object in front of them to minimize the body sway. When the patient is balanced upon both feet, he may be allowed to drop back against the table so that the buttocks establish slight contact. This may act as a steadying influence. Care must be exercised for if more than slight contact is allowed it is apt to disturb the natural pelvic accommodation. The patient may be allowed to rest his shoulders against the table to reduce excessive body sway. Beilke[9] states that normally the patient should not lean against the table, but if excessive sway is present he may be allowed to rest slightly against the table. Hobbs[37] pushes the patient back against the table so that the hips and shoulders touch it.

Fuchs[38] positions the patient so that the back is in contact with the Potter-Bucky diaphragm. The head is immobilized in an adjustable head clamp. The torso is held in position by two compression bands, the upper compressing the lower portion of the thorax and the lower extending across the pelvis. The immobilization bands are tightened sufficiently to steady the patient but not to a degree that would disturb normal postural relationships.

Rush and Steiner[39] align their patients by having them mount a rotary platform with an adjustable central saddle which is made to fit snugly into the patient's crotch, assuring central placement. An additional bracket which the patient bites is then pushed into position to hold the patient in the erect posture and locked. This technic definitely standardizes the position of the patient for each picture. However, it does not allow the patient to assume his usual postural stance.

A study was made to examine the error involved in positioning a subject for a standing x-ray.[40] Five subjects were selected. Each subject was positioned and x-rayed by three different technicians. Differences in the femur tops of the same subject varied from 0.1 to 0.3 cm., whereas the position of the symphysis with respect to the mid-line varied from 0.3 cm. in one subject to 1.1 cm. in another. The need for further information on this factor of pelvic side shift is evident. Research should be conducted to determine the normal limits of pelvic side shift, the effect of pelvic side shift upon the standing x-ray, and methods which may be employed to control this factor.

X-RAY EQUIPMENT

The technical details of the x-ray equipment necessary for standing pictures are in general acceptance. A vertical table with a Bucky or a stationary wall Bucky is used. The mid-heel line on the floor, the mid-line of the table, the center line of the Bucky, cassette, and film should all be in the same plane. The cassette and plate must be absolutely horizontal, and the floor must be level. The tube should be centered at the point about midway between the anterior superior spine of the ilium and the greater trochanter of the femur. Bailey and Beckwith[1] used a 36-inch tube to target distance and Swift[21] used a 40-inch tube to target distance. A 14×17 film with the long side vertical is best adapted to the technic for standing films. The exposure is adjusted for the patient in accordance with the possibilities of the equipment; short exposures with sharp detail have resulted from the use of high kilovoltage technic.[41]

Various means have been employed to record the mid-line on the x-ray plate. A plumb bob with a steel piano wire which coincides with the mid-table line is the most satisfactory if it is placed between the table and the film so that the positioning of the patient will not disturb it. A commercially marked cassette is sometimes used or the film is marked after exposure and development. This latter method where

the mid-line is assumed to be the bisector of the film is subject to error. The assumption that the plate is positioned in exactly the same place each time is dangerous. In a series of pictures taken to determine the effect of side shift, it was found that the constructed mid-line on the film varied in relation to a fixed point on the mid-line of the table which was transmitted to the film.[40] This error was as much as 1 cm. in a couple of cases. It may have been due to inaccurate positioning of the film in the cassette or improper positioning of the cassette in the holder, that is, pushing it all the way home.

Magnification accounts for an error of from 20 to 25 per cent with the target to film distance at 36 inches according to Donnahoe.[42] Friedman[43] gives a table for the percentage of radiographic distortion at varying object to film distances which indicates that an object to film distance averaging 15 cm. with a target to film distance of 3½ feet would give a 16 to 17 per cent distortion.

A discussion of the sources of error in the production of a standing film may be summarized under two headings: (1) the errors in positioning the patient such as pelvic side shift, shifts in position due to pain, faulty weight bearing due to disturbance of the feet, and (2) errors in the x-ray technic such as error of magnification, errors in drawing up the films, et cetera. On the basis of differences in leg length observed in positioning the same patient by different technicians, x-ray differences in leg length of up to 0.3 cm. may be considered within the limits of normal.

INTERPRETATION

Pearson[23] and Downing[44] both emphasize the importance of good interpretation of the standing x-ray. Many physicians tend to read much more from an x-ray than is actually in evidence.

Swift[21] observed that variations in the height of the femoral heads in respect to the mid-malleolar line are relative as well as actual. She concluded that it was impossible in a given case to determine with any degree of accuracy whether the condition was one or the other. A combination of both relative and actual shortening may be present.

Pelvic side shift can cause relative shortening of the legs. An attempt was made to test the effects of side shift by x-raying subjects in the normal position and comparing the results with those obtained by x-raying the subject again after shifting the pelvis 1 and 3 cm. to either side without moving the position of the feet.[40] Shifting a person to one side produced a relative shortening of the leg on that side. If the pelvis was shifted to the short-leg side, the relative shortening was increased. When the pelvis was shifted to the long-leg side, the relative difference between the legs was decreased. Where small differences existed in leg length, side shifting the patient to the long-leg side was found to equate the leg length. Shifts from the normal of as much as 3 cm. to either side resulted in relative changes in femur top height of as much as 0.5 cm.

Pelvic side shift observed on the x-ray plate may be part of the normal compensatory mechanism for short leg, it may be due to muscle spasm or subjective pain, or it may be due to an error of positioning the patient. The influence of pelvic side shift on the x-ray findings presents a problem of x-ray interpretation in cases showing small differences in leg length or in cases with marked degrees of side shift.

X-RAY STUDIES

Several studies of leg length have been reported —two of which are of particular interest. Reynolds and Hooton[45] and Rush and Steiner[39] reported the results of x-ray studies of leg length of subjects selected at random and not on the basis of a physical disability. Reynolds and Hooton chose college personnel for their studies and observed that the long left leg occurred in the majority of both sexes, 63.16 per cent of males and 73.91 per cent of females. They observed even leg length in 21 per cent of both sexes. Rush and Steiner selected a control group of 100 general duty soldiers and x-rayed them in the course of their study of cases having low-back pain (Table IV). They observed that of the 100 cases, 71 had short legs; 41 of these had short right legs and 30 had short left legs. These two sets of statistics provide the only records of the incidence of short leg in the population. However, from a strict statistical point of view both series of results are selective and do not necessarily represent the population as a whole.

TABLE IV—INCIDENCE OF SHORT LEG*

A. 100 General Duty Soldiers (Control Cases)

	mm. of Difference	Total mm. Difference	Number of Cases	Average in mm.
1) Even	none		29	
2) Right Short	0-5	74	19	3.89
	6-10	151	19	6.10
	11-20	35	3	11.66
	20 or over	0	0	0.00
		260	41	6.34
3) Left Short	0-5	56	19	2.94
	6-10	74	10	6.80
	11-20	11	1	11.00
	20 or over	0	0	0.00
		141	30	4.70

B. 1000 Cases of Backache

	mm. of Difference	Total mm. Difference	Number of Cases	Average in mm.
1) Even	none		230	
2) Right Short	0-5	665	199	3.34
	6-10	963	119	8.09
	11-20	1128	78	14.47
	20 or over	278	10	27.80
		3034	406	7.47
3) Left Short	0-5	604	196	3.08
	6-10	836	106	7.88
	11-20	739	55	13.43
	20 or over	188	7	26.71
		2367	364	6.50

*Data compiled by Rush and Steiner.[39]

The method of x-ray study of Reynolds and Hooton was not described and the number of cases upon which the statistics were based was not given. Thus, the figures of Rush and Steiner are the more significant of the two as a study of the incidence of short leg.

The statistics compiled in Table V represent x-ray studies of patients who have been selected for the most part because of low-back pain or some related postural abnormality. They were cases suspected of having a short leg. Thus the percentage of short-leg cases occurring in each series is significant only in relation to its own particular study. The percentage

TABLE V—STUDIES OF X-RAY DIFFERENCES IN LEG LENGTH

Investigator	No. of Cases	No. of Cases of Short Leg	No. of Cases of Short Right Leg	No. of Cases of Short Left Leg
Bailey and Beckwith[1]		610	288	322
Eggleston[13]	465	338	186	152
Hobbs[27]	307	257	141	116
Kerr *et al.*[29]	150	137	71	66
Kraus[78]	500	360	(increased sacral base plane)	
Pearson[23]	200	135	104	31
Rush and Steiner[39]	1000	770	406	364
Schwab[6]	540	345		
Swift[21]	90	62	29	33

of even-leg cases in these studies varied from 8 to about 35 per cent but for the most part it was fairly consistent. The question of compensation mechanics enters into any lengthy discussion of the significance of these results of leg-length differences.

It is apparent that the right leg is shorter more often than the left, although the percentage difference between the two is small. The question arises as to whether handedness has any influence on the differences in leg length. Sweigard[46] in a study of the bilateral skeletal asymmetry concluded that right handedness had an influence on the upper thoracic area but that no pattern of asymmetry was found in the alignment of the spinal column as a whole.

From 65 per cent to 91 per cent of the people having low-back pain have a difference in leg length. Rush and Steiner's statistics show that 77 per cent of the group of soldiers presenting symptoms of low-back pain had a difference in leg length. Of these 37.5 per cent had a difference in leg length over 5 mm. Among the controls 71 per cent showed a difference in the length of their lower extremities of which 33 per cent had a difference of over 5 mm. Kerr and his associates[20] found in their series of cases that 62 per cent had a difference in leg length of over 5 mm. Schwab found that 64 per cent of the cases he x-rayed had over 5 mm. shortening.

The statistics of Rush and Steiner are particularly significant in that they show a similarity of difference in leg length between a group of patients presenting symptoms of bachache and a control group selected at random. The group with symptoms of backache had a higher percentage of cases among the classes showing 11 to 20 mm. shortening and 21 mm. or more shortening.

Statistics recorded in Table V represent selected groups from different sections of the United States. The incidence of short leg corresponds except for the group examined by Pearson which showed a high percentage of short right legs.

Table VI gives a tabulation of the amount of shortening observed by the different investigators in their x-ray studies. The statistics of Rush and Steiner again are the most interesting.

TABLE VI—X-RAY-DETERMINED DIFFERENCE IN FEMUR TOP HEIGHT

Investigator	No. of Cases	No. of Cases of Short Leg	Difference in Leg Length
Bailey and Beckwith[1]		432	Average 8.8 mm.
Kerr *et al.*[20]	150	137	Right 0-4 mm.—18% 5 or over—33.5% Left 0-4 mm.—20% 5 or over—28.5%
Rush and Steiner[39]	1000	770	Right average 7.47 mm. Left average 6.50 mm.
Schwab[8]	540	345	Over 0.5 inch
Swift[21]	90	62	Average 7.2 mm.

EFFECTS OF THE SHORT-LEG SYNDROME

Many symptoms have been attributed to poor posture and to poor body mechanics. These complaints for the most part have been taken *a priori* as pointed out by Hellebrandt and Franseen[47] in their excellent review of the physiology of the erect stance in man. Outside of the complaints of an orthopedic nature, there is little scientific evidence to justify the claims that have been made in the name of poor posture.

One of the obvious results of short leg is poor body mechanics which results in various types of postural disturbances—the outstanding one being scoliosis. This relationship has been pointed out by many who have made studies of body mechanics.[8,24,26,48-51]

The most common symptom associated with short leg is backache.[18,52-57] Rush and Steiner[39] concluded from their studies of standing x-rays of soldiers presenting symptoms of low-back pain that there was not enough x-ray pathology to account for the symptoms of backache in the group studied with the exception of the frequency of the difference in leg length which they found. Although a comparable number of control subjects showed differences in leg length, Rush and Steiner still concluded that short leg was an etiological factor in backache. Furthermore, statistics of the x-ray determinations of short leg showed that from 65 to 91 per cent of the patients presented for postural study x-rays had short legs.

Many osteopathic writers state that short leg is responsible for chronic postural disturbances. The correction of these disturbances, they point out, is not maintained unless the poor body mechanics is also treated.[14,18,58,59]

Other orthopedic problems which have been shown to be influenced by short leg are intervertebral disk,[60] foot disturbances,[17] psoas fibrositis,[61] shoulder pain.[62] Schwab[8] has presented a good discussion of the influence of short leg on body mechanics and the resultant disturbances which may arise. Goldthwait and his associates[63] believe that postural disturbances are directly related to arthritis. Increased stress of postural imbalance may in time lead to the development of osteoarthritis. Beadle[64] observed that in spondylosis there is a conspicuous arrangement of the osteophytic processes with a greater development in the right dorsal and left lumbar regions.

Magoun[58] discussed several cases which responded to therapy which included treatment of a short leg—edema of the vocal cords, persistent tinnitus aurium, functional heart condition, mastitis, recurrent dislocation of the right femoral head, and tic douloureux. Pearson[65] presented a case of enuresis which responded to treatment of a short-leg postural problem.

Fatigue has also been attributed to the short-leg syndrome. To date there has been little physiological evidence to substantiate this supposition. Clinically, many people state that they are less tired after treatment. Various studies have been made to determine the rise in oxygen consumption for standing as compared with the reclining or semireclining position.[66-69] The rise in metabolic rate was observed to be negligible or very small in all cases. The fatiguing effect, if one is present, as a result of short leg, must be explained by something other than an increase in the basal metabolic rate as a result of attempts of the body to compensate for poor posture.

The low energy output for standing makes it unlikely that significant differences would be shown by comparative metabolic studies of subjects having good and poor posture. It would be better to try to explain the fatigue factor in some other manner. Hellebrandt and others[66] suggest that the fatigue associated with the motionless vertical posture may be due to cerebral anemia, since it disappears when the hydrostatic effect of gravity on the circulation is combatted by the peripheral pumping effect of postural sway. Larsen[67] concluded that if the metabolic cost of standing is negligible, the accumulation of metabolites or depletion of energy reserves, as a fatigue causative factor, apparently may be ruled out. She suggests that the effect of standing on the redistribution of body fluid weight is to delay the formation of motor stimuli of the antigravity and other muscu-

lature, leading to excessive sensory stimulation which results in an additive resultant expressed as the fatigue of standing. Short leg results in a larger leg volume,[22] which should accentuate this proprioceptive mechanism of fatigue.

ACCOMMODATION TO SHORT LEG

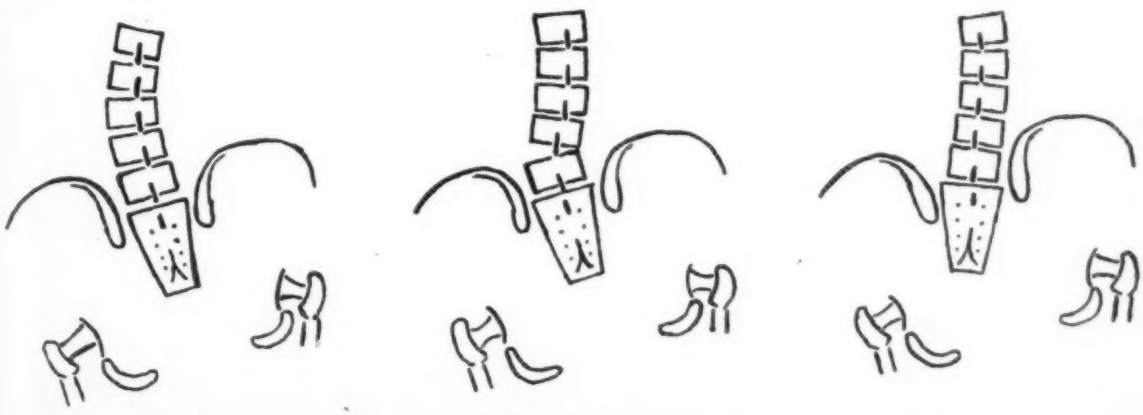
The effect of short leg upon body mechanics has been delineated by Schwab.[8] He demonstrated that short leg results in a scoliosis which may be functional or static or a combination of both. Beilke[70] contends that there are three mechanisms of adaptation to short leg. He believes that there is a definite transition from the simplest or most common type to the other two which he ascribes to an altered sacral position. The first stage of accommodation in Beilke's classification is the most frequent type observed. It simulates the physiological position assumed in simple side bending according to Strachan.[15] The sacrum is tilted to the side of the short leg; the lumbar spine is convex to the same side; the bodies of the lumbar vertebrae are lateroflexed to the opposite side and rotated into the convexity of the curve. The second stage is transitional in character. Beilke states that the lumbar spine in the easy normal position cannot adjust to a change in weight stress. Pelvic side shift results and the spine assumes a position of marked flexion or extension. The bodies of the lumbar vertebrae rotate into the concavity. A single lesion rotated and lateroflexed to the side of the long leg may be present at the junction of the fifth lumbar and sacrum or at the junction of the fourth lumbar on the fifth. Magoun[58] accounts for the second stage as a result of psoas and abdominal muscle spasm which seeks to pull the spine into an erect position and eventually succeeds in spite of the uneven femur tops. Magoun believes that the third stage is an overcompensation mechanism as a result of continued soft-tissue tension. According to Beilke the third stage is the result of a further attempt to establish balance. A simple lateroflexion mechanism starts from above downwards resulting in additional weight stress on the originally high side of the sacrum which forces it to level off, usually in the second stage, and finally to tilt to the long-leg side in the third stage. A new curve develops convex to the long-leg side which finally engulfs the entire spine and the sacrum (Fig. 2).

Kerr and his associates[20] analysed their cases in relation to the three mechanisms of compensation. They found that more second and third degree and atypical compensation cases occurred in the groups with the least amount of shortening. They raised the question as to whether these stages were actual or just relative changes due to inherent error in the x-ray picture. They state that there were many transitional stages which could not be adequately classified. Some of these atypical cases were due to factors such as psoas spasm or fibrosis and congenital anomalies of the sacrum and lower lumbar vertebrae. Kerr and his associates also observed that the type of accommodation was not influenced by the amount of shortening, the age of the patient, or the duration of symptoms.

Bailey and Beckwith[1] studied the effect of anomalies on short-leg accommodation and concluded that anomalies play little part in determining the short-leg side.

Larson[14] limits his classification of short-leg accommodation mechanism to two stages. They are similar to Beilke's stage one and stage three. Larson believes that the maintenance of the lumbar convexity on the long leg side (stage three) is dependent upon the presence of a sacroiliac lesion on that side. He states that the compensatory pattern will occasionally be confused by some particular muscular stress such as the common example of psoas muscle contraction.

Pitkin and Pheasant[71] studied the motion of the sacroiliac joint and made the following detailed analysis of pelvic motion which Pearson[23,72] has modified on the basis of his studies of structural problems and their x-ray picture. In the following description it is assumed that the left leg is short. (1) The right acetabulum is raised and the pelvis tilted toward the left. (2) The pelvis is shifted as a whole to the right in relation to the mid-heel line (shown by the symphysis and midpoint of the sacrum). (3) There is adduction of the right leg and relative shortening or lowering of the top of the sacrum (caused by the pelvic shift right). There is abduction and relative lengthening of the short left leg in an attempt to raise the sacrum on the left side (shown by the change in the angle of the neck of the femur and through relative changes in the size of the ilium). (4) The left ilium is rotated forward about the transverse axis of the symphysis (shown by an increase in the angle of inclination on the left) which causes further relative lengthening of the short left leg by elevating the left sacroiliac joint and lifting that side of the sacrum (seen on the standing film through an altered distance from the fourth and fifth lumbar bodies to the iliac crest). (5) The right ilium tends to rotate backward about



First Stage Second Stage Third Stage

Fig. 2. Stages of accommodation to short leg.

the transverse axis of the symphysis pubis (part of the sacral leveling mechanism). (6) Rotation of the ilia, abduction of the left hip, and adduction of the right hip are an effort to correct the tilt of the pelvis. These efforts are effected through muscle pull on the bones and are coordinated through the mechanisms for maintenance of balance. If the strain is beyond the physiological reserve of muscle function, contractures are maintained and fibrosis develops. If these mechanisms are not sufficient to correct the tilt of the pelvis toward the left, the lumbar spine will show a scoliosis that is convex toward the left. The bodies rotate toward the convexity of the scoliosis. (7) The lumbar lordosis usually increases. (8) The trunk as a whole tends to list toward the right. The lateral pelvic shift frequently corrects this tendency and sometimes overcorrects it. (9) This is the complete picture of functional scoliosis.

Attempts to interpret the elements entering into pelvic accommodation have been made from standing x-rays by osteopathic examiners. Pelvic rotation and side shift have been analysed by the study of the position of the mid-point of the first sacral segment and the mid-point of the symphysis in relation to the constructed mid-malleolar plane. Until standardization of the standing x-ray procedure is completed conclusions from such studies will be inconclusive. Furthermore, disagreement exists as to the interpretation of the same findings. It is extremely difficult to translate the complete mechanism of pelvic accommodation which takes place in three dimensions from a shadowgram in two dimensions. There is a tendency for the investigator to become so absorbed in the details of measuring pelvic accommodation that he loses sight of their importance to the study as a whole. If the two-dimensional x-ray representation of the pelvis is envisioned as a three-dimensional cylinder with the symphysis and the first sacral segment at opposite sides of the cylinder, it is apparent that the primary accommodation movement of the pelvis is a lateroflexion or tilt to the side of the short leg. This results in a displacement of the first sacral segment to the short-leg side of the mid-malleolar line and the symphysis to the opposite side (Fig. 3). This is the most common disposition seen by Kerr and his coworkers.[20] If a marked side shift of the pelvis occurs, the symphysis and the first sacral segment will be observed to be on the same side of the mid-malleolar line. The second largest group in Kerr's series had a pelvic tilt and a pelvic side shift to the short-leg side.

Pitkin and Pheasant,[71] Larson,[14] Pearson,[23,72] and others all state that the pelvis shifts to the long-leg side in accommodating for short leg. According to Strachan[15] the physiological motion of the pelvis

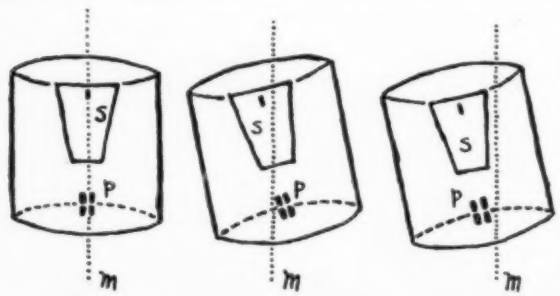


Fig. 3. Pelvic accommodation to short leg. m—mid-heel line, p—symphysis pubis, s—sacrum.

observed in sidebending the trunk is a shift to the opposite side. By definition, movement of the symphysis in relation to the mid-line has been assumed to represent pelvic side shift. In the majority of cases the greater part of the movement of the symphysis is not due to pelvic side shift but to pelvic tilt. It is obvious that certain of the conclusions on pelvic side shift have been based upon the x-ray position of the symphysis. Thus the evidence for pelvic side shift needs re-evaluation and further substantiation.

The pelvis is capable of making other compensatory changes such as those described by Pitkin and Pheasant.[71] The ilia may rotate in an anterior posterior plane. Differences in the relative height of the pubic bones are indicative of rotational changes of the ilia.[73] The pelvis may rotate in a coronal plane as indicated by changes in the obturator shadows and the relationship of the sacrum and symphysis. These movements are difficult to interpret from the two dimensional x-ray film and conclusions which have been drawn should be viewed with a critical attitude.

An analysis of the relationship of short leg, symphysis shift, and lumbar convexity based on 200 cases from the low-back study undertaken at the Chicago College of Osteopathy[40] is presented in Table VII.

TABLE VII—ANALYSIS OF RELATION OF SHORT LEG, SYMPHYSIS SHIFT, AND LUMBAR CONVEXITY BASED ON 200 CASES OF LOW-BACK DISORDER

		No. of Cases	Per Cent
	Short Leg		
Symphysis shift to short leg side	Lumbars convex to the short-leg side	29	14.5
	Lumbars convex to the long-leg side	17	8.5
	Lumbar convexity absent	11	5.5
Symphysis shift to long leg side	Lumbars convex to the short-leg side	71	35.5
	Lumbars convex to the long-leg side	24	12
	Lumbar convexity absent	10	5
Symphysis in the midline	Lumbars convex to the short-leg side	5	2.5
	Lumbars convex to the long-leg side	3	1.5
	Lumbar convexity absent	6	3
	Even Leg		
Symphysis shift	Lumbars convex same side as the symphysis	8	4
	Lumbars convex opposite side to the symphysis	9	5.5
	Lumbar convexity absent	3	1.5
Symphysis in the midline	Lumbars convex	3	1.5
	Lumbar convexity absent	1	0.5
		200	100

Bailey and Beckwith[1] concluded that analysis of the position of the symphysis in relation to the midline was valueless.

SACRAL BASE

The sacrum is the base of support for the spinal column. Thus, it is of prime importance in the evaluation of lift therapy for short-leg cases. Eggleston[73] points out that the sacral base is seldom clearly defined in the standing film. Taking the standing pictures in a different plane so that the top of the sacrum would be clearly visible has been advocated. This should be a valuable addition to the postural analysis.

Several methods are used to demonstrate sacral tilt on the x-ray plate. Beilke[9] picks corresponding points at the top of the sacrum and extends perpendiculars to the mid-heel line. If a difference is present in the height of the lines, the sacrum is said to be tilted to the lower side. Bailey and Beckwith[1] magnify the impression of sacral tilt by constructing a perpendicular to the line intersecting the sacral spines

so that it intersects perpendiculars erected from the top of the heads of the femurs. Perpendiculars are then dropped from these intersections to the mid-line. The difference between the latter two perpendiculars is ascribed to the sacral tilt (Fig. 4). Table VIII contains data from three x-ray studies on sacral tilt. The lack of uniformity of the method of determining sacral tilt is attested by the variations in these results.

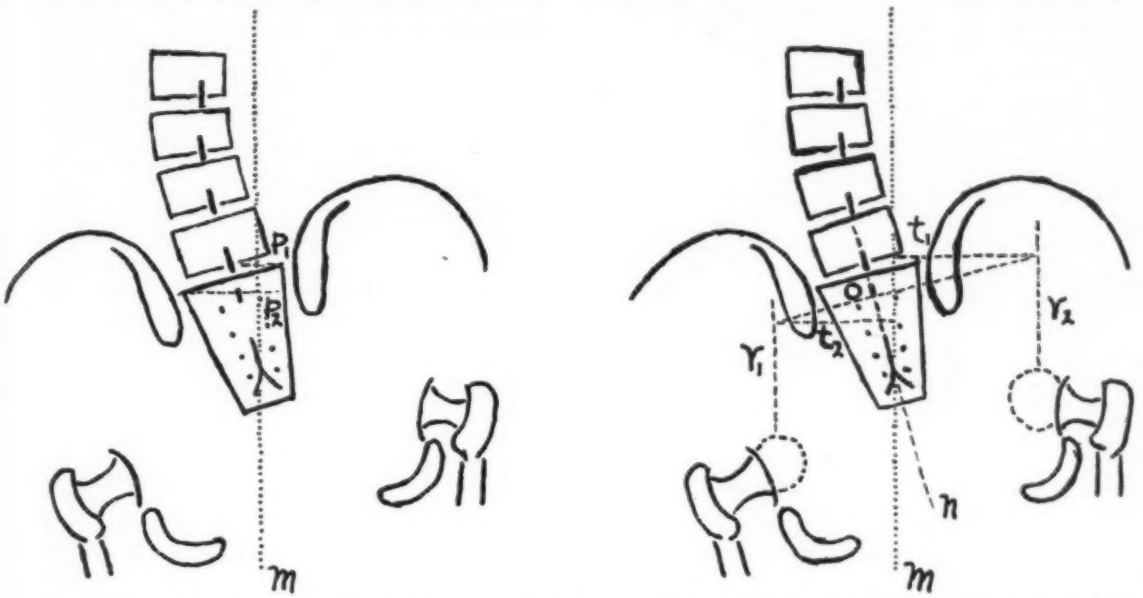


Fig. 4. Methods of demonstrating sacral tilt. m—mid-heel line, n—mid-sacral line, o—perpendicular to the mid-sacral line, p_1, p_2—perpendiculars from similar points to the top of sacrum to mid-heel line, r_1, r_2—perpendiculars erected from the tops of the heads of the femurs, t_1, t_2—perpendiculars dropped to the mid-heel line.

TABLE VIII—SACRAL TILT

Investigator	Sacral Tilt to Short-Leg Side	Sacral Tilt to Long-Leg Side	Sacral Tilt Absent
Bailey and Beckwith[1]	194 or 72%	27 or 12%	32 or 16%
Eggleston[72]	46.4%	9.1%	
Kerr *et al.*[39]	49.2%	33.3%	17.5%

Lateroflexion of the sacrum observed on x-ray has been interpreted as indicative of a clinical picture of anterior sacrum. This was not substantiated by the statistics of the low-back study at Chicago.[40] The low sacral side on the x-ray and the clinical diagnosis of anterior sacrum corresponded in only 60 per cent of 200 cases studied.

LUMBAR CURVE

Scoliosis in the lumbar spine is part of the compensatory adjustment of the body to differences in leg length. Pearson[23] believes that the lateroflexion of the spine occurs in those cases of short leg in which the sacral leveling mechanism is not sufficient to correct the tilt of the pelvis. Kuhns[74] believes that if the musculature is good, differences in leg length are of no serious consequence and adequate compensation is made in the pelvic girdle. Where the musculature is weak, even small differences in leg length may lead to a lateral displacement of the trunk and the development of physiological scoliosis. Swift[21] found that 73 out of 89 cases had a definite curve in the lumbar spine and that both functional and organic types existed. The findings of some of the other investigators are summarized in Table IX. The majority of the short-leg cases have the convexity of the lumbar curve to the short-leg side. There is considerable variation in the percentages given for the various series but about half of the cases in any series have a correlation of short leg and lumbar convexity to the same side.

TREATMENT

The treatment of the short-leg syndrome has been discussed by many writers.[13-16,18,27,34,48,49,52,55,57,58,75] Case histories have been presented by Denslow,[53,76] Krause,[62,77-79] Magoun,[58] and Pearson.[59,65,80,81]

The management of each case depends upon the individual findings and the patient's response to treatment. Thorough osteopathic manipulative treatment of each patient from head to foot to adjust the faulty mechanics is necessary for the best response. Foot disturbances must not be overlooked. The emphasis of specific manipulative treatment is upon the lesions occurring in the pelvis and the low back, but disturbances in the upper spinal areas should be corrected to give the patient the maximum symptomatic relief. The duration of single treatments and the length of the course of treatment are purely individual matters. Success in cases of long-standing postural distress with fibrotic musculature will be rewarded only by diligent effort in the application of soft tissue and articulatory treatment.

Treatment of short-leg cases is greatly assisted by the use of lift therapy. Lifts are pads of cork, rubber, or leather which may be worn in the heel of

TABLE IX—LUMBAR CONVEXITY

Series	No. of Cases	No. of Cases Of Short Leg	Convexity to Short-Leg Side	Convexity to Long-Leg Side	Convexity Absent
Bailey and Beckwith[1]		545	245	175	125
Beal[60]	200	176	105	44	27
Hobbs[37]	307		138	27	
Kerr *et al.*[39]	150	137	82	20	
Pearson[23]		135	112	23	

the shoe or added to the heel outside. If one leg is elevated by placing a block under the foot, the spine will lateroflex to the long-leg side. If the block is removed, the spine will return to its normal position. The rationale of lift therapy is based upon this physiological principle. A lift is placed under the short leg to level the base of support of the spine and thus allow it to return to its normal contour. Lift therapy assists manipulative treatment by making the benefits of the treatment more effective and lasting. When lifts are not used, the effect of the treatment is apt to be transitory.

The objective of lift therapy is the correction of the scoliosis caused by the short leg. Lifts are not indicated in all cases of lateral imbalance. Strachan[15] cautions against their use in elderly patients with fibrosis. Age in this instance is judged by the physiological condition of the spine rather than chronological age. Experience, Magoun[58] states, has modified the restrictions he imposed upon the lifts in cases of well-compensated individuals, in the aged, in the extremely scoliotic, and in cases of ankylosis. Precautions should be maintained in the treatment of scoliosis due to poliomyelitis or other causes in which there may be a unilateral loss of spinal muscle tone. Lifts in these cases have sometimes resulted in an aggravation of the scoliotic curve.

The decision to use lift therapy rests upon the results of the structural examination and x-ray findings. A conservative approach is to treat all suspected short-leg cases for a month prior to ascertaining the x-ray degree of shortening. Certainly all cases of acute muscle spasm should be treated manipulatively until the spasm is reduced before the standing x-ray examination is made. The amount of lift necessary in a particular case is based upon the clinical findings, the x-ray difference in leg length, sacral tilt, and the degree of scoliosis. If there is an anomalous condition at the lumbosacral junction, the top of the fifth lumbar is taken as the base of the spine and its degree of tilt is considered in the decision for lift therapy.

Having estimated the probable total amount of lift necessary for the case, the initial amount of lift to be used is decided upon the basis of the age of the patient, the flexibility of the spine, and the total amount of estimated lift. The correctness of the initial lift is derived from clinical trial. In young individuals a quarter- or half-inch lift may be used initially without untoward symptoms. In elderly persons an eighth of an inch is usually sufficient to start.

If the management of the case calls for an initial trial of lift therapy or if the total amount of lift is to be built up gradually, it is often advisable to have the patient wear a pad in the heel of the shoe rather than have all his shoes changed. Some people prefer to wear a pad of rubber, cork, or leather inside the shoe, which may be transferred from one pair of shoes to another. Others find this method uncomfortable and would rather have the lift added to the heel of the shoe. It may be convenient for the patient to have only one or two pairs of shoes altered in the beginning if he is undergoing a trial of lift therapy. Leather or cork may be added to the heel of the shoe. A word of caution is prompted from experience. The physician should always measure the lifts himself. Often an overzealous or careless cobbler will give the patient more lift than is requested. Once lift therapy is instituted, the lift should be worn in all shoes or slippers used by the patient.

An eighth- or quarter-inch lift can be worn inside the shoe or added to the outside. When one-half inch is to be added, it is better to add one quarter inch to the heel of the short-leg side and remove one quarter inch from the heel of the opposite shoe (the long leg). With additions of three quarters of an inch or more, it is important to make sure that the weight of the shoes is the same. Custom built shoes can be purchased, if the amount of lift is greater than three-quarters of an inch.

Yonders[75] cautions that the use of lifts may initiate foot disorders in patients with weak feet. He advocates the use of a complete insole where lifts are put in the shoe, provided that the shoe is large enough. In cases in which a correction of greater than one quarter inch is to be used Yonders advises that the sole should also be built up by the added amount. Some cases require wedging of the heels to overcome the pronation which is present especially when heel lifts are added to the shoe.

Strachan[15] states that in children lifts should be applied slightly less than the differences as shown upon x-ray as the difference in leg length may decrease or disappear before closing of the epiphyseal lines. The child should be watched closely for indications for altering the thickness of the lift.

The addition of the lift may be done in gradual stages of one eighth inch at a time or in one quarter inch variations. Some investigators use variations of sixteenths of an inch. The addition of the lift depends upon the patient's progress under treatment. Some patients will achieve comfort with only a slight amount of the estimated lift added and if a greater amount of lift is employed untoward symptoms develop. They may stay comfortable for weeks, months, or even years before they need an addition to their lift. Recheck x-rays are of importance in evaluating the patient's progress with lift therapy. A recheck x-ray should be taken with the patient wearing his shoes and lift so that changes as a result of lift therapy may be ascertained.

The treatment of the primary or first stage of accommodation is relatively simple and straightforward and is usually met with good results upon the part of the patient. The second and third stage mechanisms and the transitional stages which are observed are the ones which present the problem. Their treatment is based upon the assumption that if a lift is placed under the side of the lumbar convexity, the curve will eventually straighten out. Lifts are therefore placed under the long-leg side in the third stage to facilitate treatment of the lumbar scoliosis. This is only a temporary measure and as soon as the treatment of the scoliosis is effected, the lift is transferred from the long leg to the short leg. Strachan[15] adheres to the simple rule of placing the lift under the side of the convexity of the curve. When the mechanism is confused Larson[14] employs the rule of placing the lift under the leg on the side of the anterior sacrum.

The role of osteopathic manipulative treatment is not lessened with the addition of lift therapy. To the contrary, it is enhanced. The lift is used to maintain the correction obtained in treating the patient. The patient may complain of an aggravation of symptoms following the use of lift therapy. There may be some new aches and pains—backache, leg pains, and shoulder and neck pains are sometimes observed. The usual complaint, if no obvious pain is experienced, is a feeling of fatigue. It is important to see the patient

at least twice a week for the first few weeks to help him through this adjustment period. Thereafter, treatment may be regulated according to the individual case and its response to therapy. In cases of considerable lumbar fibrosis as a result of compensation for short leg, regular osteopathic manipulative treatment should be carried out until the fibrosis is broken down. This necessitates a program of treatment which the patient and physician should discuss and outline together. After the patient becomes comfortable, he may respond best to treatment at monthly intervals. Later he may be seen at intervals of 3 and 6 months. With the intelligent patient the frequency of treatment may be left to his own discretion. The patient with a bad postural picture should be impressed with the fact that his treatment is never ended—that he may have to return from time to time for periodic examinations and treatment. In some cases the lift may have to be altered or adjusted at intervals.

The criteria of the success of lift therapy are, first, whether the patient becomes symptom-free under treatment and, second, whether the symptoms reappear upon removal of the lift. The results of treatment are the subjective improvement in the patient's complaints, usually the removal or lessening of the low-back pain. Many patients under treatment for short-leg syndrome remark upon how much more energy they seem to have. This again raises the question as to whether this increase in vitality is a result of the amelioration in posture. Clinically, improvement in posture appears to be associated with an improvement in vital energy.

Objective evidence of the results of lift therapy are sadly lacking in medical literature. Outside of a few case histories there is no clinical report of the results of lift therapy. A study of the cases from the Chicago low-back series[40] showed little change in the convexity of the curve in the majority of cases where x-rays were taken before and after lift therapy. In a few cases the curve had changed; these were presumably the only cases of physiological scoliosis in the series which had had recheck x-rays. The most obvious changes were in the pelvis and its relation to the mid-heel line. The top of the femur in most cases of lift therapy showed a decrease in the difference in leg length. However, some cases did not show any change in the difference in leg length, and quite a few did not show a measurable increase in the height of the short femur commensurate with the amount of the lift which had been added.

In a few cases in which serial standing x-rays were taken at intervals, further compensatory changes took place while the patient was under treatment even though the lift was the same. The pelvic tilt was lessened on the side of the lift, sometimes an equivalent amount equal to the lift being accounted for by measurement. The sacral tilt was observed to be decreased in most cases. The outstanding measurable change in most cases was the shift of the pelvis from a position of abnormal relationship to the mid-heel line to one of better position. Both the sacrum and the symphysis were observed to be closer to the mid-heel line. If the pelvis had side-shifted to the short-leg side, it was usually observed to be closer to the central position in relation to the mid-heel line. This x-ray observation of the tendency for the pelvic base to assume a more physiological position explains the chief result of lift therapy—that of improving the body mechanics and thus reducing the weight-bearing stresses of the body. Improvement in posture also results in an amelioration of backache because of lessening of the chronic muscular contraction needed to counteract the abnormal posture. This loss of pain may partially explain the increase in body vitality associated with good body mechanics.

DISCUSSION

The presentation of this paper has opened many avenues of thought to the writer. The stress placed upon the standardization of the standing postural-study x-ray may seem pedantic to the busy practitioner who makes a hurried structural examination of his patient and arbitrarily puts the patient on lift therapy without the benefit of an x-ray examination. Research correlating x-ray and physical findings is needed to clarify the indications for the application of lift therapy. Serial x-ray studies are necessary to find out the effects of therapy over a period of years. Only on the basis of such studies will the empirical use of lift therapy on the basis of physical signs be justified.

Pelvic side shift may produce a relative shortening of one leg. The x-ray interpretation of relative and actual shortening of leg length involves a consideration of the effect of pelvic side shift. Pelvic side shift to a given side will cause a relative lowering of the femur top on that side. An estimate of the effect of side shift should be made when it is present. In borderline cases in which small differences in leg length are found pelvic side shift may account for the discrepancy in leg length observed on the x-ray plate.

Borderline cases present the real diagnostic and therapeutic problem in cases of short leg. Sometimes the x-ray examination must be ignored and a therapeutic trial of lift therapy be attempted. The justification of the use of lift therapy in all cases of short leg presenting symptoms of fatigue is questionable. Many a psychoneurotic, complaining of fatigue, has been subjected to treatment by lift therapy by an overzealous physician.

"Level the sacral base" is the clinical aphorism in lift therapy. However, since the upper border of the sacrum is not always clearly defined, the use of sacral tilt cannot be relied upon in all cases. Moreover, anomalies at the lumbosacral junction or a lack of visible sacral tilt may necessitate the substitution of the upper borders of the fourth or fifth lumbar vertebrae in the clinical evaluation of spinal support. The response of the sacrum to lift therapy is equivocal. Sometimes the lift does not produce a visible x-ray effect on the sacrum; other times the effect produced is not commensurate with the amount of lift used. Further study of the effects of lift therapy on the sacrum should be enlightening.

Kerr and his associates[20] raised the question as to the accuracy of the present method of classification of short-leg accommodation. The present system has the advantage of simplicity but the classification of the second and third stage mechanisms leaves a nucleus of unidentifiable cases. There is no evidence that there is a transition from type one to type three. Further study of the accommodation mechanism and the application of lift therapy is necessary to broaden contemporary knowledge and to improve therapeutic management of the problem.

Should all cases of short leg be treated by lift therapy whether symptoms are present or not? This raises the question as to whether lift therapy can be

classified as prophylactic treatment. Until more definite evidence is obtained relating to osteoarthritis, chronic muscular disorders, and other chronic functional disorders as each concerns the short-leg postural problem, it is not wise to state categorically that all cases of short leg should receive treatment. The need for lift therapy is an individual problem. Each person makes his own individual adjustment to differences in leg length. The body build, muscle bulk, and muscle tone are important factors in the individual's compensation. The tone of the spinal musculature is of special importance. Even a person having considerable shortening may be symptom-free if his spinal muscles are in good tone.

Several methods have been employed to study short-leg problems. Each study gives the physician valuable information. A combination of x-ray and physical tests would give more information about each case. The following would be an ideal x-ray examination: x-ray by Beilke's technic[9] to determine the patient's normal stance pattern, stereoscopic films to determine the mechanics of pelvic accommodation, x-ray by Rush's technic[39] to determine the actual amount of shortening, fluoroscopic examination by the technic of Judovich and Bates[13] to determine the effect of lift on the patient, and special tilt x-rays to determine the degree of sacral tilt.

These are all static examinations. To project the study of body mechanics into the future, speculation must be made of the possibilities of dynamic postural studies. Medicine is becoming a study of dynamic integration. What answers await the development and application of new methods to the study of the body in action?

SUMMARY

An attempt has been made to summarize the work on the short-leg syndrome. A delineation of the etiology, diagnosis, and treatment of short leg has been presented. X-ray studies show that short leg has an incidence of 70 per cent in the population. The importance of this factor in the etiology of backache is demonstrated by the fact that 65 to 95 per cent of the patients presented for postural x-ray studies showed a difference in leg length. A short right leg is observed more frequently than the left; about half of the short-leg cases have the accommodation mechanism of short leg, sacral tilt, and convexity of the lumbar curve on the same side. Stress has been placed upon the need for further research on the short-leg syndrome not only to advance the knowledge of body mechanics but also to perfect the treatment of postural problems.

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DR. STILL'S CONTRIBUTION TO SCIENCE

The scientifically clear-sighted Dr. Lane succinctly summed up Dr. Still's contribution to science as inclusive of adjustment and immunity; the latter being at least an indispensable condition to security against disease, for thereby the activity or function of the cells may be freely expressed. Dr. Lane clearly saw the true significance of these contributions and their bearing on present day medicine. He had a firm grasp of the history of science, a personal experimental knowledge of present day methods and tendencies, and, as a consequence, a vision of the work needed or required for tomorrow. He was enthusiastic for the future, firmly believing that the man of science could verify or confirm by methods of pure science the clinical results daily secured by osteopathic therapy.

We emphasize this for the simple and substantial reason he had respect only for verifiable facts, although like most scientists he would at times indulge his philosophical fancies, yet he always knew where fact ended and hypothesis held sway. Laboratory facts have their limitations; still they are facts, nevertheless, depending upon the significance of their interpretation, which in their relationship to a very complex mechanism should always be carefully guarded or else some subsequent fact, associated with the preceding one, may present an entirely different phase to the equation. But the interpretation of a series of facts may in time establish a theory, if sufficiently supported clinically, that is of commanding importance.

Dr. Still was not a laboratory man in the sense as we understand the term today, but he had the utmost respect for the laboratories of nature as all his writings vividly and abundantly attest. Although he was perfectly willing to trail the facts discovered by the physiologist and chemist, still they must measure up with at least a modicum of clinical substantiation. (And it is surprising how clearly he foresaw some of the developments of the past decade.) But we all realize that even today with all the present wealth of laboratory effort that the gaps are far in excess of the bridges and that as a consequence hypotheses pad many pages. We have been passing through a laboratory age, which no doubt has colored and still is coloring our efforts to an unwonted degree. Not that laboratory work is not well and good as far as its limitations permit, but rather that laboratory work as some seem to be led to think can usurp the crown of scientific medicine, with everything else thrown into the discard. This constitutes the fatal mistake upon the part of some. The laboratory controls or masters them unwarrantedly, instead of utilizing the laboratory as simply one means to an end. Diagnosis and therapy have other important arrows in their quiver.

Dr. Still's diagnostic forte was the detecting, analyzing and interpreting of the minutiae of structural registrations. His therapy was the applying of this knowledge. This meant to him far more than most of us are fully aware. Many of us saw his painstaking palpatory efforts, based upon a surprising knowledge of the living anatomy and physiology. But how many have been willing to devote even a respectable fraction of time to this work? All willingly grant that he was a genius, and still with such an example before us we fall down even in creditable imitative effort. This is a little hard to explain. It can't all be due to lack of diligence or will power. Is it not probable that false hopes, based on certain accomplishments, inspired by the present laboratory age have disrupted basic values? But there are evident signs that the pendulum is swinging back again, which, of course, means that it will carry and hold a certain gain in its extreme excursion, with an added impetus given to structural clinical prosecution. So probably through contrast and evaluation we may confidently look forward to considerable accomplishment in the coming decade.—Carl Philip McConnell. Reprinted from THE JOURNAL OF THE AMERICAN OSTEOPATHIC ASSOCIATION, November, 1925.

The Role of the Radiologist in Relation to Degenerative Diseases*

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Simply stated, degenerative disease occurs when the catabolic processes outstrip the anabolic ones. Generally speaking, the degenerative diseases are the slowly progressive ones associated with aging and spoken of as "chronic." Actually, time has no uniform effect on the rate of aging which is a physiological phenomenon modified by environmental, bacterial, hereditary, constitutional, and innumerable metabolic factors. The older biologists used to speak of "poor protoplasm" and that is as good a description as is available. For some the clock runs down faster than for others and the radiologist can judge physiological age by changes in the various tissues such as demineralized bone, the replacement of robust functioning tissue by the cheap substitute of inert fibrosis, and by abnormal deposits of calcium in retrogressing pathological tissues. The radiologist's sign posts of the degenerative diseases are atrophy, fibrosis, and calcification.

The old dictum that a man is as old as his arteries holds and it may apply to joints and viscera as well. The entire organism does not age equally at the same rate and few men disintegrate totally as did Holmes' "wonderful one-hoss shay." Some of its parts run down faster than others and it may be said that a man's liver, kidneys, or heart died before the rest of him.

The function of the radiologist with respect to degenerative disease is twofold. First, by diagnostic methods, he can demonstrate the gross anatomy and physiology of various organs and confirm the work of the physiologist or research worker. By film studies and fluoroscopy he may find variations from the normal, thus aiding the clinician in establishing a diagnosis and presaging the pathologist, or he may follow the course of a given disease during treatment and assist in prognosis. Second, he may prescribe various types of radiation therapy for arrest or amelioration of a degenerative process.

The subject is so extensive and space so limited that only a few examples can be shown to illustrate this fascinating subject. Some cases will be included to emphasize the fact that age is not always the all-important factor in degenerative diseases.

ILLUSTRATIVE CASES

Case 1 (Fig. 1) was that of a man with a fractured hip which, because of technical factors, had to be nailed twice within a week. He was 102 years old. The x-ray showed the hip joint to be, despite his great age, practically free from arthritis. Although his hip had to be nailed twice, the patient made a complete recovery.

Case 2 (Fig. 2, 3, and 4) was one of progeria in a child 6 years old with renal rickets. The boy presented the outward appearance of a dwarfed old man with a fringe of gray hair around a bald head. The larger boy in Figure 2 was a normal child of 4. In renal rickets the kidneys are contracted and fibrosed and show marked arteriosclerosis. Because of the kidneys' inability to function properly, excessive phosphorus is retained in the blood, acidosis is present, and there is decalcification and deformity of bones with failure of epiphyseal development. Cases 1 and 2 present the paradox of a *youngster* of 102 with minimal joint changes and an *oldster* of 6 with senile, contracted, and sclerotic kidneys.

Case 3. Figures 5 and 6 show the heart of a hypertensive patient 62 years old selected because it is agreed that arteriosclerosis goes hand in hand with degenerative diseases and leads to myocardial failure. In Figure 5 the aorta is somewhat widened and there is a suggestion of hypertrophy of the heart but the pulmonary fields are clear and there is no radiographic evidence of decompensated heart disease. An x-ray made 4 years later (Fig. 6) shows the heart markedly enlarged, venous engorgement of the hilar vessels,

*Presented at Afternoon Session A, Fifty-Fourth Annual Convention of the American Osteopathic Association, Chicago, July 13, 1950.

Fig. 1. Case 1. Hip of a man 102 years old with no arthritic changes. Fig. 2. Case 2. Progeria secondary to renal rickets in a boy of 6. Note the bald head and the fringe of hair which is gray. The taller boy is a normal child of 4.

Fig. 1

Fig. 2

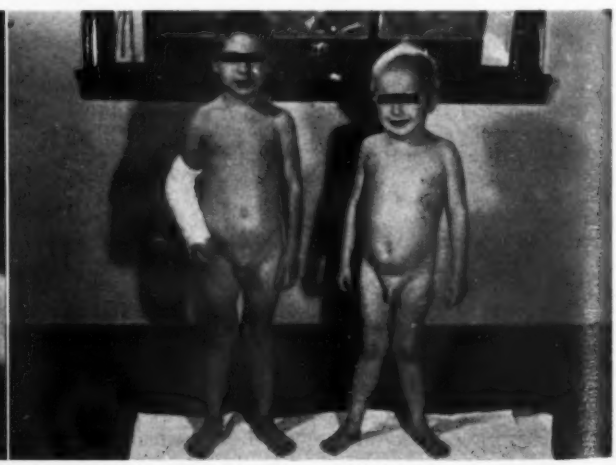

Fig. 3

Fig. 4

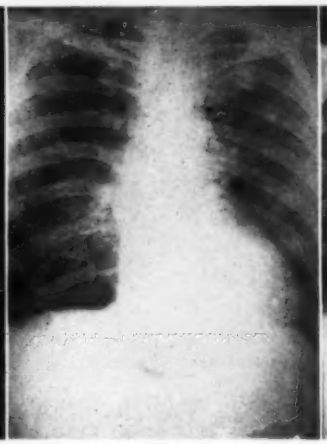
Fig. 5

Fig. 6

Figs. 3 and 4. Case 2. Bone changes in renal rickets such as cupping of the epiphyses of the hips, knee joints, and ankle joints; osteoporosis, particularly of the shafts of the femora and tibiae, and a beginning bowing of the tibial shafts. Fig. 5. Case 3. Hypertensive heart disease in a 62-year-old patient. X-ray shows slight hypertrophy of the heart and a widening of the aorta but no signs of pulmonary failure. Fig. 6. Same case 4 years later. The heart is markedly enlarged and there is venous engorgement of the hilar vessels, early pulmonary edema, and pleural effusion at the left costophrenic angle—all evidence of myocardial failure.

early pulmonary edema, and pleural effusion in the left costophrenic angle. Films made 10 days later following digitalization still showed hypertrophy but the dilatation noted earlier was absent and there was no sign of pulmonary edema or pleural effusion. A film made 3½ months later showed a complete congestive failure with dilatation of the chambers, pulmonary edema, and pleural effusion. The patient died the next day. The autopsy findings were those characteristic of degenerative disease secondary to arteriosclerotic hypertensive heart disease—cardiac enlargement, pleural effusion, occluded old right coronary, myocardial infarct, peripheral edema, thrombus of the left ventricle, and infarct of the right lower lobe.

Case 4. Figure 4, by way of contrast, shows cardiac hypertrophy and dilatation in a 10-month-old infant who, on admission to the hospital, was scrawny and underdeveloped. At 12 months, when readmitted, the heart had grown larger. There were no clinical signs of congenital heart disease. The child died at the second admission and autopsy showed chronic interstitial myocarditis (Fiedler's type), marked endocardial *fibrosis*, hypertrophy and dilatation of the heart, atrophy of the muscle cells, and fibrous tissue replacement. This child was only 1 year old but death resulted from *chronic* degenerative heart disease just as it did in the old man in the preceding case.

Case 5 (Figs. 8 and 9) was an example of the disease known as atrophy of the lung, which occurs only in older people. There was a steady progression of fibrosis in the pulmonary fields in a 5-year period. In this disease the expansible alveolar tissue of the lung atrophies and is replaced by inelastic fibrotic tissue. Because of the increased interstitial tissue there is resistance to the flow of blood in the pulmonary circulation with resulting cor pulmonale or right-sided heart failure.

Case 6 (Fig. 10) was one of esophageal varices

Fig. 7. Case 4. Marked enlargement of the heart due to an hypertrophy and dilatation in a 10-month-old infant without clinical signs of congenital heart disease. Fig. 8. Case 5. Increased pulmonary markings and hyperaeration of the chest such as is found frequently in individuals over 60. Note that the cardiac contour is within normal limits. Fig. 9. X-ray made 4 years later than Figure 8 shows a marked fibrosis of both pulmonary fields, hypertrophy of the cardiac shadow observed especially in an enlargement of the pulmonary artery. Fig. 10. Case 6. Esophageal varices secondary to portal obstruction accompanying cirrhosis of the liver.

Fig. 7

Fig. 8

Fig. 9

Fig. 10

Fig. 11

Fig. 12

Fig. 13

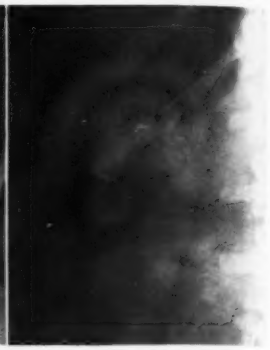

Fig. 14

Fig. 11. Case 7. Persistently dilated duodenal cap which is frequently found in older individuals due to the lack of hydrochloric acid. Fig. 12. Same case. Corkscrew esophagus, a condition often associated with other degenerative diseases and secondary to neuromuscular imbalance. Fig. 13. Case 8. Fibrous change in the descending colon secondary to chronic ulcerative colitis. Fig. 14. Case 10. Fibrosis of the gallbladder and calcification of the fundus.

extending upward from the cardiac end of the stomach toward the pharynx. The varices are secondary to cirrhosis of the liver with obstruction of the portal circulation by the fibrous tissue replacement of degenerated liver cells.

Case 7 (Figs. 11 and 12) is presented to show a dilated duodenal cap which is often observed in aging individuals. It is noted with achlorhydria which is found in a great number of postmenopausal women. Because of the absence of hydrochloric acid the duodenal contents are not neutralized; hence the stimulation to contraction is absent. Other signs of degeneration such as the corkscrew esophagus, generalized osteoporosis, and calcium deposit in the shoulder joint can be seen. The corkscrew esophagus is thought to be secondary to neuromuscular dystrophy and must be differentiated from varices or carcinoma of the esophagus.

Case 8 (Fig. 13). Colitis of long standing has produced fibrous tissue replacement of normal muscularis resulting in a narrowed inelastic tubular bowel with absence of haustrations and contractility.

Case 9. Diverticulosis is a common incidental finding during examination of the colon. Boyd[1] states "the weakness seems to be due to loss of tone and elasticity of muscle which is characteristic of a degenerative period of life." Diverticulosis itself is asymptomatic but it may be attended by serious consequences such as perforation and infection, in which case the original definition of "a wayside shelter or lodging of ill-repute where trouble is apt to brew" is justified.

Case 10 (Fig. 14) was one of chronic cholecystitis with calcification of the fundus. The gallbladder is greatly contracted by fibrosis. Considerable liver damage can be expected from such long-standing pathology although it may not be a significant cause of cirrhosis. The radiologist can aid the surgeon routinely in deciding whether or not to remove a pathological gallbladder. Cholecystectomy may prevent a chain of events leading from obstruction of bile in the liver radicals to hepatitis, cellular atrophy, degeneration, and fibrosis which comprise the essence of cirrhosis.

SKELETAL MANIFESTATIONS OF DEGENERATIVE DISEASES

There is no tissue in which degenerative disease is reflected so readily as in the skeletal system. As has been pointed out elsewhere, normal bone develops in membrane and in premolded cartilage. This growth is dependent on several factors, such as osteoblastic and osteoclastic activity, endocrine influence, biochemical reactions which include the action of phosphatase on dahlite. Vitamin activity and the presence of protein to be used in the formation of the bone framework are a necessity (Diagram I). It is emphasized again that bone is living and vital tissue and participates constantly in metabolic and hematopoietic activities.

In adult bone there are two nicely balanced systems opposing and cooperating with each other, one anabolic or osteoblastic and the other catabolic or osteoclastic. When degeneration occurs the catalytic process continues whereas the osteoblastic function diminishes or ceases. As Albright[2] says, probably similar processes occur elsewhere in the body but can be demonstrated best in the skeleton and, I may add, can be visualized easily by x-ray studies. Albright[2] has shown that there are various hormonal steroids which influence the stability of bone. Estrogenic and androgenic hormones of this type stimulate osteoblastic activity. In addition, he points out the presence of two other steroids in the adrenal cortex which are of utmost importance, particularly in view of present-day therapy which employs cortisone and ACTH. The first is steroid N which supplements and reenforces androgen and estrogen therapy. It makes its appearance at the menarche and disappears at menopause. It stimulates secondary sex characteristics, particularly axillary and pubic hair growth and bodily contours.

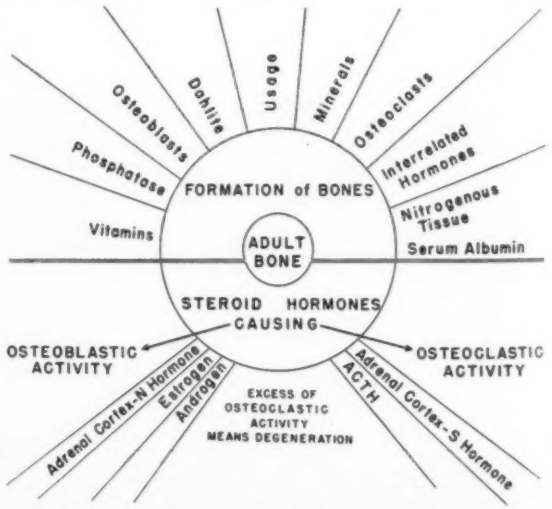

Diagram I. Formation and maintenance of bone.

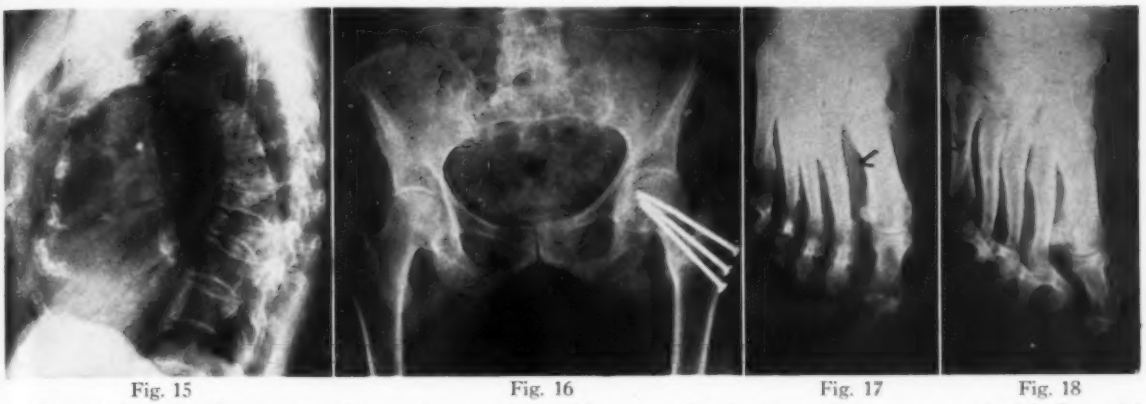

Fig. 15 Fig. 16 Fig. 17 Fig. 18

Fig. 15. Case 11. Postmenopausal type of osteomalacia with compression fractures of numerous vertebral bodies, calcification of the aortic arch, and deposits of calcium in the intervertebral disks. Fig. 16. Same case with fracture of the hip, one of the most important and frequent findings in post menopausal degeneration. Figs. 17 and 18. Case 20. Moist gangrene secondary to diabetes and arteriosclerosis. Note erosion of several metatarsal heads and the proximal phalanx of the great toe and edema and emphysema of the soft tissue secondary to the presence of gas bacilli.

and osteoblastic activity. Opposed to this is the S cortical steroid hormone which acts by inhibiting the osteoblastic activity.

At menopause or in old age there occurs a diminution in osteoblastic activity so that new bone ceases to be laid down. The calcium and nitrogen content of the blood is not absorbed; hence decalcification and demineralization of the skeletal structure ensue. Albright[2] and others maintain that if estrogenic substances are replaced by administration in old age and at menopause the process of decalcification may be arrested and even reversed, seeming to prove that degeneration is a result of dysfunction of the gonads and the N adrenal cortical steroid. Albright also shows that with the administration of ACTH the cortical S steroid is stimulated, resulting in osteoclasia with subsequent skeletal decalcification. Along these same lines he maintains that in Cushing's syndrome there occur osteoclasia and excess of blood calcium. By the experimental use of testosterone he was able to reverse these processes, thus showing the antagonistic relationship of ACTH to both testosterone and the cortical N steroid hormones. The fact that ACTH in excess will cause demineralization explains some of the unsatisfactory side effects of the employment of this substance.

Case 11. Figures 15 and 16 show most satisfactorily the various phases of degenerative disease in bone in a postmenopausal individual. Here are seen a generalized osteoporosis of all the skeletal tissue. Numerous compression fractures of the dorsal spine, due to the absorption of bone, are observed (Fig. 15). There is also a fracture of the left hip (Fig. 16). Fractures of the hip constitute a very important phase of degenerative disease and their explanation, it seems to me, is most interesting. Following postmenopausal decalcification the angle of the neck and shaft of the femur changes from about 125 to nearer 90 degrees. Structurally the bone is weak but the muscle tension is as great as ever and sheering stresses result in fractures such as noted here, one of the most common aspects of degenerative disease observed in older women. Also seen on the films is metastatic calcification of the soft tissues in the abdominal aorta and the nucleus pulposus between numerous lower dorsal bodies. These are other frequent findings in older people.

Many degenerative conditions are due to ordinary wear and tear and this applies chiefly to skeletal structures. It was shown in a study of 500 patients with low-back pain that 80 per cent of them had degenerative disease.[3] This means principally an involvement of the intervertebral disks or interarticular cartilage because these tissues are more prone to injury than the more resistant bone and are more susceptible to fibrous replacement than to regeneration. Indeed, it was possible to show that degenerative disease of the spinal column could begin before the twentieth year.

The x-ray films pertaining to cases 12 to 20 and case 22 are omitted because of lack of space, but were shown on slides at the original lecture. The pertinent x-ray findings of these cases are mentioned, however, as a matter of completeness.

Case 12 showed irregular absorption of the intervertebral disk which is frequently a part of a chronic low-back syndrome. Case 13 showed a more marked involvement of the lumbar spine, there being not only thinning of the intervertebral disks but also the formation of osteophytic spurs and especially narrowing of the spinal joints due to a degeneration of the interarticular cartilage as well as the disks.

Case 14 showed aseptic necrosis due to an embolic process of the capital epiphysis and adjacent diaphysis in the hip of a growing child. The end result of such a condition may be degenerative changes in later life. Case 15 was an excellent example of the outcome of such a case. The patient had Perthes' disease 30 years previously. In the interval he has been symptom-free but because of faulty mechanics of the flattened femoral head, broadened femoral neck, and widened acetabulum, together with an extra strain on locomotion, this patient was beginning to develop arthritic changes, which were noted on x-rays, and were accompanied by characteristic symptoms.

Case 16 was one of aseptic necrosis of the spine which is often observed in adolescents and is known as Scheuermann's disease. The end result of such a process may lead to a deformity of the spine in later years, particularly if it occurs in the dorsal area where there is a tendency to cartilaginous absorption and an exaggeration of the kyphosis.

Case 17 showed the end result of aseptic necrosis during adolescence. There was flattening of the second metatarsal head in each foot, a condition known as

Fig. 19

Fig. 20

Fig. 21

Fig. 19. Case 21. Dry gangrene secondary to arteriosclerosis resulting in bone erosion and joint destruction and swelling of the soft tissue but no infection. Sclerosis of the blood vessels may be seen. Fig. 20. Case 24. Prostatic hypertrophy due to the presence of a fibroadenoma. Note defect on inferior border of bladder and second defect superiorly due to a complicating carcinoma. Fig. 21. Case 25. Congenitally cystic kidney accompanied by marked hypertrophy of the kidney proper in a young man of 27. Eventually dilatation and decompensation ensued.

Freiberg's disease which leads to deformity of the foot with poor foot mechanics and often produces clinical symptoms.

Case 18 was a typical example of osteoarthritis in an aging individual, a condition known as morbus coxae senilis, which showed absorption of the interarticular cartilage, changing of the angle of the femoral neck, and overgrowth of the acetabular margins. There is also calcification of a large fibroid which is obviously a degenerative process, frequently found in women postmenopausally.

Case 19 illustrated Raynaud's disease. In this condition the long continued arteriolar spasm due to disturbed vasomotor mechanism results in asymmetrical nonsuppurating gangrene affecting nearly always the fingers.

Case 20 (Figs. 17 and 18) showed suppurating gangrene of the foot due to diabetic arteriosclerosis with secondary infection, necrosis of bone, and gas gangrene of the soft tissues. Here there is a combination of two degenerative diseases, diabetes and arteriosclerosis. Midthigh amputation was necessary.

Case 21 (Fig. 19). By way of contrast, bone absorption, soft tissue atrophy, and articular destruction have occurred in this case. These manifestations are nondiabetic in character and are secondary to arteriosclerosis. No infection is present. It will be noted that there is no air in the soft tissue; it is a dry gangrene. Despite extensive involvement, the foot returned to normal under conservative medical management. Arrows point to calcified blood vessels.

Congenital anomalies, by causing faulty mechanics, repeatedly stimulate a degenerative process. In Case 22 a hemivertebra was present on the right side between the fifth lumbar vertebra and the sacrum resulting in osteophytic reaction on the margins of the fifth lumbar and sacrum on the left side due to displacement of the transverse process on this side which produced pressure against the sacrum.

Case 23 is one of Paget's disease, a disorder of the aging individual, which is a combination of bone absorption with attempts at bone repair. The two processes may occur simultaneously. Bizarre calcium pattern and deformities due to weight bearing on soft bones and overgrowth of bone may be demonstrated on the x-ray. The spine, skull, pelvis, and long bones are the most often involved.

Case 24. Fibrosis of the prostate with hypertrophy is one of the constant degenerative diseases in men. In Figure 20 will be observed defects in the bladder resulting from pressure of a fibroadenomatous prostate extending into the bladder. An incidental finding was the presence of a prostatic carcinoma. This patient was 72.

Case 25 (Fig. 21) is one of congenital disease of the kidney, an example of early aging, which ends as a degenerative process. There was a polycystic kidney which may manifest itself either in infancy or in later life. There was also progressive atrophy of the parenchyma which was balanced by hypertrophy. Eventually in this disease dilatation, decompensation, and death ensue. The illustration shows the kidney of a young man of 27 in which there is considerable hypertrophy of both kidneys. The cystic condition, however, is observable.

SUMMARY

An attempt has been made to show the importance of radiology in the diagnosis and management of degenerative diseases. Numerous examples of this category of morbid conditions have been shown and emphasize the importance of radiographic methods in understanding the normal physiologic processes in body metabolism and further demonstrating pathological variations.

The aging processes in bone have been stressed particularly since such changes may be shown with facility. Frequent x-ray studies should be made to help establish a diagnosis with repeated follow-up to check on the progress.

Radiation therapy should be considered in the management of degenerative diseases.

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Evaluation of the Newer Antiarthritics and the Treatment of Rheumatoid Arthritis with Desoxycorticosterone

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Since the advent of cortisone and the pituitary adrenocorticotropic hormone (ACTH), there has been a search for less rare and less costly drugs to produce similar effects. From published reports, there is no doubt as to the value of cortisone and ACTH in the treatment of arthritis. It is not claimed that the newer treatments are as valuable but they are being used in great numbers because of availability and economy. Most of them are being tried in the hope they will stimulate endogenous production of the adrenocorticotropic hormone and thereby benefit the patient. With one exception, most of them seem to be disappointing.

Freeman and his associates[1] selected pregnenolone for clinical trial in the hope that it would stimulate more active steroid hormones. Davison and Koets[2] selected it because it lowers urinary 17-ketosteroid excretion which seems to be a constant finding in spondylarthritis, even in very early cases. These investigators, along with others, obtained results which seemed to warrant further study in the use of this drug.

However, after use in a small series of cases, I found that very little benefit was obtained in this therapy. Recommended dosages, also amounts greater and less than those recommended, were given but in no case was there any apparent benefit due to their use. Treatment was discontinued after the third week. There is always the possibility that over a longer period good results would have been obtained. However, Guest and others[3] also ran a test series on pregnenolone and their reports indicate that they had even worse results than I did. In several of their cases, the patients refused to continue treatment because it apparently made the condition worse rather than better. From the above it would seem that pregnenolone produces little, if any, benefit when used in the treatment of rheumatoid arthritis.

Guest and associates[3] also investigated the use of testosterone propionate in a small series of cases but failed to find any consistent improvement in their patients.

Epinephrine has also been suggested in the treatment of arthritis. Vogt[4] found that the administration of epinephrine greatly increased the amount of cortical material in suprarenal venous blood. Thorn,[5] in an address before the Association of American Physicians in 1949, stated that improvement was found after the injection of rheumatoid patients with 0.5 mg. of epinephrine every 6 hours. Sometime later, he and his coworkers[6] remarked that, under continued administration, the drug seems to lose its effect as an adrenal cortical stimulator. However, because of improvement in patients, they maintained that this treatment may still be of merit.

Of all the newer forms of treatment suggested by cortisone and ACTH, that begun by Lewin and Wassén[7] using desoxycorticosterone acetate and ascorbic acid seems to be the most promising. In 9 out of 9 patients injected with 5 mg. of desoxycorticosterone acetate followed by intravenous or intramuscular injection of 1,000 mg. of ascorbic acid, there was an immediate amelioration. They reported alleviation of pain, increase in motion, and a decided feeling of well-being in all cases; in some cases results were quite striking.

LeVay and Loxton[8] confirmed the results in a report on 23 patients of whom 21 were improved, some to a great degree. Kellgren[9] reported less striking results in a series of 6 patients in which only one showed improvement. Spies and associates[10] also reported poor results with the treatment.

In a second report, LeVay and Loxton[11] clarified some of the conflicting reports. They explained that errors in technic might have been responsible. They maintained *the injection of the desoxycorticosterone must be made in the muscle.* They reported cases which showed no results when, through error or in testing, the injection was made in subcutaneous tissue or fat. In the same patients, good results were obtained when the injection was given in the muscle. They also stated the injection of the ascorbic acid must be made simultaneously or within a very few minutes after the hormone.

In my own experience with the treatment, in a series of 5 patients with rheumatoid arthritis, various results were obtained; all were good. In 4 patients there was some decrease in pain, increase in motion, and a general feeling of exhilaration. The most remarkable results were obtained in a male 41 years of age with polyarthritis of about 7 years' duration.

The patient, a barber by trade, was in constant pain previous to the treatment. He had learned to use his shears without involving wrist motion (both wrists were swollen and painful), but stated that their use was a constant source of pain. He also remarked that for 5 days before treatment was begun his customers had had to raise and lower the chair for him as it was too painful, even with the use of both hands, for him to do it himself.

Arthrometer readings on his wrists before the injection were: Right, 18; left, 22. Within 12 minutes after the injection of Artho-Sterone,* there was a decided relief in pain and a greatly increased range of motion. Arthrometer readings were: Right wrist, 52; left wrist, 49.

On returning to his shop after the injection, he was able to pump up his chair with one hand. The use of the shears, although still painful to a degree, was greatly facilitated. After a period of 8 hours, the former symptoms returned, but on the next day the same good results were obtained after another injection.

In the general use of the treatment, it was found that the more acute and painful the condition was at the time the injection was given, the greater was the relief experienced. Results were poorest in older patients in whom bone growth and muscle spasm had

*Artho-Sterone, a product of the Columbus Pharmacal Co., is prepared in ampules containing 5.0 mg. of desoxycorticosterone acetate and 500 mg. of sodium ascorbate (as vitamin C). This allows the administration of both medications in a single injection. The writer cautions that care is necessary in opening the ampules as they tend to open rather forcefully. This is probably caused by the use of carbon dioxide as a stabilizing agent for the vitamin C, and it seems not to interfere with the action of the contents of the ampule. If the product is kept cool, but not refrigerated, the explosive action is minimized.

practically stopped joint motion and the affected areas were not acutely painful.

The treatment, however, is not without hazard, especially if the dosage is too high or it is used over too long a period. Apparently, though, the adverse effects are not so great as those being encountered in the use of cortisone and ACTH. Investigation[12] has shown that the desoxycorticosterone-ascorbic acid treatment does not decrease the number of eosinophils as does ACTH. In three cases of eosinophilia, no change was found in the blood level during 6 hours following the combined injection. Thus it can be considered that the desoxycorticosterone-ascorbic acid treatment will not be accompanied by the metabolic side effects noted with the use of ACTH.

Nevertheless, desoxycorticosterone can cause retention of sodium which could result in edema both peripheral or in the internal organs themselves. Decreased excretion of sodium may cause increased excretion of potassium which, if nothing else, predisposes to muscular weakness, soreness, and extreme fatigue. Therefore, because of this ability to cause sodium retention it should only be used with extreme caution in patients where kidney disease is known or suspected. It is absolutely contraindicated in patients with high blood pressure as it may cause a further elevation. Kling[13] found that hypertension developed in two of his patients under the treatment and serious heart failure in another; he regards the treatment as not worth the risk to the patient. It must also be remembered that patients with Addison's disease are extremely sensitive to the hormone and therefore would be predisposed to greater side effects. Kling's[13] warnings should be given attention and in cardiac patients, it would be well to proceed with utmost caution—if at all. However, in the light of published reports, desoxycorticosterone must be regarded as incomparably safer than cortisone or ACTH.

The exact action of the drug combination at this present writing is unknown. Most investigators assume that the action of the drugs takes place in the tissues themselves rather than in any of the body organs. One of the reasons for this assumption is the rapidity of action which is far greater than with either cortisone or ACTH.

In testing the treatment, no results were obtained when the ascorbic acid was injected first. No results were obtained when the injection of the ascorbic acid was delayed too long after that of the sterone. It is to be assumed that the desoxycorticosterone must be present in the muscle when the vitamin C is injected.

A possible explanation is that the desoxycorticosterone and ascorbic acid act together to produce a third substance in the tissues which may be responsible for the beneficial effects of the treatment. Therefore, there is always the chance that at some future date it will be possible to isolate this substance and prepare it chemically. Such a substance might be potent orally and have less toxic effects than the present treatment. Until that time, the simplest form of treatment is a combined injection allowing both products to be given simultaneously.

In using the desoxycorticosterone acetate and ascorbic acid treatment, it would be wise to plan a routine in advance. The physician should explain to the patient the need for the utmost cooperation. Before the treatment is started, each patient should have a complete physical examination. Special emphasis should be placed on kidney and cardiac function. Weight and blood pressure should be recorded. Motion or limitation of motion in each of the involved joints should be evaluated. When an injection is given, a record should be kept of the increase in motion, if any, and of any further increase after subsequent injections.

A check on weight and blood pressure should be made daily. A rapid gain in weight after the injection suggests edema in the tissues and is an indication for discontinuing the therapy. Blood pressure elevation is another signal to discontinue treatment. Cardiac and kidney function should be watched closely and treatment stopped at the first sign of failure of either one. It would also be well to place the patient on a salt-free diet and use a substitute that is high in potassium.†

Finally, it might be advisable to discontinue the treatment after the third injection if no apparent benefit is evidenced as most of the investigators report that favorable results are usually observed *after the first injection* and are maintained for longer periods on the subsequent use of the treatment. However, this would be a matter of personal judgment, and it might be well to remember the words of Robertson,[14] "The fact that no improvement may be obtained after one, two, three, or even four injections should not discourage one from continuing, since improvement may be slow in starting."

†Neocurtisal, a product of Winthrop-Stearns, is recommended by the writer. It contains potassium formate, 360 mg. per gram.

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Acute Back Sprain in Industry

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The acute back sprain as it occurs in industry presents a challenge to the osteopathic profession. Experience indicates that osteopathic manipulation is the specific definitive treatment for this injury just as antibiotic therapy is curative in gonorrhea. The success of osteopathic manipulative care of acute back sprain has been the cause of considerable approbation for the osteopathic profession since Dr. Still's first use of this therapy.

The problem of acute back sprain in industry is widespread. During the past 5 years at The Foxboro Company, Foxboro, Mass., the most frequent severe injury has been acute low back sprain. The average employee enrollment has been 1,200, with approximately one third of this group in occupations predisposing to back sprain.

All new employees during this period have had a complete preplacement physical examination in conformity with usual industrial practice and, in addition, a back stability test which provides better screening for those who might be exposed to heavy lifting hazards. It is important to note that the insurance carrier rates The Foxboro Company among its best accounts inasmuch as the accident severity and frequency rates stay relatively low.

PHILOSOPHY OF ACUTE BACK SPRAIN

One cannot see hundreds of acute back sprains without developing a philosophy as to its etiology, pathology, prevention, and treatment. The basic principle that governs the back problem is, "Structure and function are interdependent." Hilton's law clarifies the joint picture: "The nerve supply to a joint also supplies the structures over the joint."

All physicians have observed organic structural defects which have occurred as a result of improper functional abuses; for example: the tendinitis of tennis elbow, the gastritis of overeating, and the acute back sprain of overlifting. These lesions are reversible only when the abuse is diminished sufficiently or the structure strengthens to withstand the stress. Also it will be agreed that a joint which is congenitally defective or previously diseased is predisposed to sprain and that a normal joint can have stresses applied to it which are in excess of its structural limits, with a consequent sprain.

However, the majority of sprains occur from myotactic and proprioceptive reflex failures at a time when relatively small stresses are applied and complex joint motions are in operation, usually lifting improperly with the back flexed, knees stiff, and rotating while extending the back.

Myotactic reflexes are initiated when stresses are applied to muscle, permitting correct tonus for smooth contraction and relaxation of opposing muscle groups. Proprioceptive reflex control is initiated within the joint as a protective mechanism which reinforces myotactic action and, in the presence of sprain, results in spasm over the joint, thereby limiting its motion.

Both reflexes are perfected through joint education patterns which must be constantly maintained if joint sprain is to be prevented. Therefore, a fatigue state, systemic or local disease, or defective central nervous system control may disable these reflexes, with a failure of joint load distribution resulting in a sprain. These factors all point to the necessity of remedial back exercises in the rehabilitation of protective reflexes which are always defective after joint sprain.

Pathologically, the enormous reaction which results from local shock after a sprain is out of proportion to the actual trauma which may range from a state of no damage to one in which there is a laceration of joint structures with attendant hemorrhage. In either case, the immediate reaction is one of vasospasm with local tissue anemia, muscular spasm, joint immobility, and increased sensory (pain) stimuli; followed shortly by vasodilatation with a flushing extravasation of blood serum which produces marked edema and exaggeration of the lesion.

Prevention of back sprain is an important part of the industrial health program. Employees are instructed in the art of lifting: To flex the knees with the back erect, lift with the ham strings, rotate only from the erect position, using all the mechanical aids which are provided, and to ask for assistance when necessary. Back sprains are preventable; negligence is the major cause.

Examination of the patient who is suspected of having acute back sprain must be very carefully done to determine the diagnosis. It should include:

1. Past history, which should include information concerning accidents, systemic diseases, and x-ray studies

2. Present history covering subjective symptoms; information concerning the act which originally provoked pain; location, severity, and radiation of pain; and motions increasing or decreasing pain

3. Objective determination of whether or not body movements are guarded; whether or not there is pelvic tilt or protective gait; if there is restriction in passive or active joint motion; if Lasègue, Ober, or Naffziger tests are positive; where points of tenderness or spasm are noted; and whether or not reflexes or skin sensitivity are abnormal

4. X-ray and laboratory studies, as indicated.

A good back examination form used by the American Mutual Liability Insurance Company which demonstrates a routine examination is reproduced on page 130.

TREATMENT

Treatment of acute back sprain is indicated according to the extent of injury which may be classified in two groups:

1. Mild or moderately severe (95 per cent)—patients are able to walk into the office.

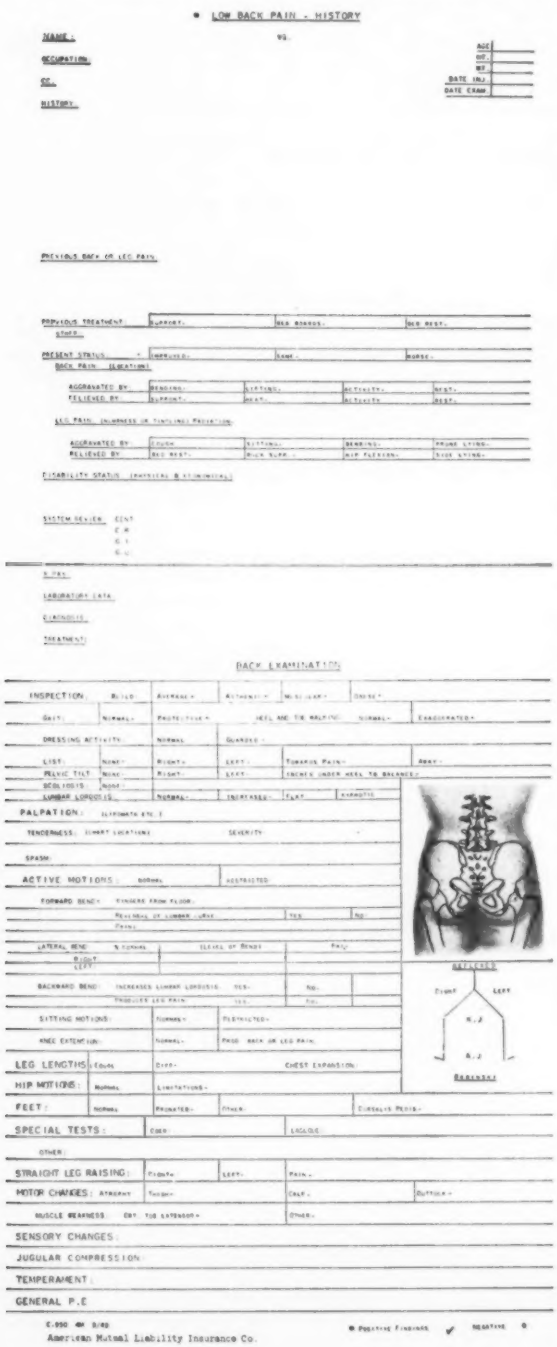
2. Severe (5 per cent)—patients are unable to move from accident site.

Definitive Treatment of group 1 is initiated only after a firm diagnosis of acute sprain is made and the probability of fracture or systemic disease is ruled out. However, the least possible time should elapse between the accident and osteopathic manipulative therapy of the immobilized joint. Sprains are usually seen within 2 minutes of the injury and complete

joint motion is more readily accomplished at once since edema is not present. Pain relief is as remarkable as when an acute abscess is incised.

Since most vertebral sprains occur in rotation, a rotation technic must be employed to produce muscle spasm release and joint mobilization. The patient is requested to inspire deeply and then corrective force is exerted during expiration, which is an important aid in obtaining the relaxation necessary to permit the completion of joint motion.

If spasm is sufficient to block joint motion, procaine infiltration or three ethyl chloride spray frosts are administered over the area of point tenderness and manipulation is attempted a second time. In the infrequent event that immobilization persists, further manipulation is delayed for 24 hours: to continue stretching will only produce a more disabled joint. Soft tissue relaxation is contraindicated. In this situation Dr. Still's admonition, "Find it, fix it, and leave it alone," is definitely appropriate.



Heel lifts are advised for actual short legs.

Return to work is immediate, with the warning that heavy lifting must be restricted for 2 or 3 days. There is *no lost time.*

Definitive treatment of group 2 is delayed until adjunctive therapy is effective: the joint syndrome is originally very pronounced and the danger is present of increasing hemorrhage around the joint. As soon as the patient finds out that he can move about in bed, he is permitted to get out of bed with help. Osteopathic corrective manipulation is applied each day until complete joint motion is established. Persistent radiculitis prompts further investigation relative to intervertebral disk injury or serious joint disease.

Therapeutic adjuncts include a tight adhesive strapping for joint support applied immediately. Morphine or Demerol may be necessary to alleviate the pain which is so severe that the patient is initially unable to move. Analgesia is maintained with Empirin compound and codeine, ½ grain as necessary. Complete bed rest is prescribed for a day or more, until all radiating pain has subsided. Ice packs, a few minutes each hour, suppress edema during the first day.

The effect of heat therapy is unpredictable. Heat seems to help some cases and make others worse. It should be tried cautiously during the convalescent period. Hot packs are probably as effective as any form of heat.

Remedial back exercises are tedious to perform but must be done faithfully for several months to re-educate the protective reflexes and prevent a recurrent sprain. An effective exercise program compiled for distribution to patients is reproduced below:

BACK EXERCISES
Do them on the floor

1. *Lying on Back.*—Hands at back of neck—chin in—back flat—breathe deep, raising chest—hold chest up and exhale slowly by drawing abdomen in and up.

2. *Lying on Back.*—Knees bent—flatten back against floor by pulling abdominal muscles in and up and tip hips up a little. Breathe normally.

3. *Lying on Back.*—Bend one knee—raise other leg straight—lower the leg *slowly* keeping abdominal muscles pulled in and back flat on floor.

4. *Lying on Back.*—Hands on top of head—stretch whole side, pull side abdominal muscles in—relax—repeat other side.

5. *Lying on Back.*—Hands on edge of ribs—take deep breath spreading ribs—hold ribs out and exhale slowly by pulling abdomen in.

6. *Lying on Back.*—Hands behind neck—raise head and shoulders slightly (about 6 inches)—relax.

7. *Lying on Stomach.*—Contract buttock muscles—relax.

8. *Lying on Stomach.*—Grasp on wrist with other hand—pull down hard—lift shoulders—relax.

9. *Standing.*—Back to wall—heels 2-3 inches from wall—flatten back against wall by tilting hips—keep chin down.

10. *Standing.*—Hands behind neck—pull lower abdomen muscles in and up.

Begin by doing exercises 5 times and gradually increase to 20-25 times.

Do exercises twice a day.

Begin with No. 1 and No. 2 and *add* one exercise every 2 days.

After a few days you will remember to pull abdomen *in* and tip hips back whenever walking or standing. It will become second nature in a few weeks.

The patient in group 2 returns to light work as his back becomes nearly symptom free, usually in 1 to 3 weeks and returns to heavy work when a back function test reveals that the back is quite stable.

COMPARATIVE THERAPY

At the present time, the majority of acute back sprains in industry are being treated with partial immobilization, several weeks of total bed rest, and without definitive manipulative therapy. At an excellent panel discussion, on "The Industrial Back Problem,"[1] recently an outstanding group of orthopedic surgeons agreed that "manipulation of acute back sprains may be effective but we just do not do it." A direct quotation from the Panel *Syllabus* on the conservative treatment of back sprain—acute, mild or moderately severe is as follows:

Bed rest—boards, position, duration

Traction—value, technique

Support—strapping, corset, belt, brace, body cast

Shoe corrections and arch supports—heel lifts, pads, plates

Heat—diathermy, dangers of diathermy, other methods of application of heat

Manipulation—

Excision of lipomata—

Ober fasciotomy—

Stripping iliac fascia—

Procaine injection of tender areas or trigger points—

The consensus of verbal opinions of members of the Panel concerning some of the methods were as follows:

Bed rest usually lasts about *3 weeks* without bathroom privilege. Extremity muscles are exercised to maintain tonus and circulation and the patient returns to light work when his back stabilizes.

Bed boards and positioning of patient to diminish strain are employed.

Support is given by immediate adequate strapping, with accessory corset, belt, or brace applied when patient gets out of bed. It is worn for several weeks.

Shoe corrections and arch supports—heel lifts, pads, plates—are used.

Heat is used immediately in the form of diathermy carefully applied and dry and moist heat.

Manipulation might be good but no one does it.

Excision of lipomata is done if trigger point area is present.

Ober fasciotomy is used if pain is produced by stretching fascia.

Stripping iliac fascia and procaine injection of tender areas are employed.

CONCLUSIONS

1. The acute back sprain in industry is of tremendous importance to the employee, industry, and insurance companies.

2. Careful back screening is essential during the preplacement physical examination.

3. Back sprains are preventable; employee instruction is essential.

4. Precise diagnosis and a complete history must precede effective treatment.

5. Specific osteopathic manipulative therapy shortens the disability of acute back sprain, thereby increasing available man hours and production and drastically curtailing industrial insurance costs.

56 South St.

REFERENCE

1. Panel discussion on The Industrial Back Problem, Seminar on Industrial Medicine and Surgery, Boston, Mass., March 21, 22, 1950, sponsored by The American Mutual Liability Insurance Co.

THE TWENTIETH YEAR

This number completes the twentieth year of the JOURNAL. The first number was published September, 1901, the publication being a bi-monthly for the first year, and since then a monthly.

The JOURNAL was founded for a definite purpose, always keeping in view the service of the best interest of the profession along scientific, educational, legislative and ethical lines. The problems that have constantly risen for solution have been many, but with their ever-present consideration, varying as new and expanding contacts have come to the surface, the Association has never lost its sense of responsibility to the great field of the healing art. It has held fast to certain ideals, firmly believing that the public's as well as its own interest can unquestionably be served best through independent development. The twentieth year has more than fully justified this conviction and viewpoint. . . .

There has never been a period when our labors have been so indelibly stamped upon scientific records as the present, or when public approval and support has been so unequivocal. These lines are definite and firmly set, simply requiring careful and consistent nurturing in order that our ideals may be still further realized.

We believe that we are not unduly stressing the point when we state it is the positive elements whereby we will be judged in the future, as we have been in the past, for it is the actual accomplishment by distinctive osteopathic measures that have placed us in our present enviable position. The scientific cue, rational osteopathic development, reveals the base of our past and present, and with no less assurity for the future.

Toward scientific facts generally we can have none other than the kindest of feeling and most wholesome respect. But facts by themselves may mean little or much, depending upon their interpretation, and relationship to correlated facts. We believe osteopathy is broad and deep enough to encompass in the correct sequential chain every pathological finding. . . .

The steadfastness of the profession is shown by its support of first-class educational institutions, hospitals and sanitariums, by legislative accomplishments, and by public confidence. The knowledge gained through bedside experience and experimental work has given added confirmation, and development, to early osteopathic results and confidence. The measure of the twenty years is probably far more than we can now easily discern and realize.—Editorial, THE JOURNAL OF THE AMERICAN OSTEOPATHIC ASSOCIATION, August, 1921.

Retroperitoneal Tumor

Report of a Case

RALPH E. EVERAL, D.O.
J. L. McDOUGAL, D.O.
Detroit

A 58-year-old married housewife was first seen by her physician on February 28, 1950. She reported that 3 weeks previously she had suffered an illness, described by herself as "intestinal flu," and characterized by generalized aching, fever, and diarrhea. Since that time her abdomen had rapidly increased in size to a considerable degree and there had been scanty, burning urination. The color of the urine was normal.

In addition, anorexia was present and there was an uncomfortable sense of fullness after the ingestion of even small amounts of food or fluid. Drenching sweats occurring nightly were a factor of major concern to the patient. It was also ascertained that there was present a nonproductive cough, flatulence, and constipation. The patient stated that she had always been nervous but that this was much increased lately. Her definition of nervousness was rather vague but it was evident that she was suffering considerable anxiety at the time of examination.

Positive findings at the physical examination were: A systolic murmur was heard at the apex and the aortic areas. The heart beat was forceful. Moist rales were present throughout the lower portion of the right lung. The abdomen was symmetrically enlarged, but did not seem tender and no fluid wave was noticed. The spleen was enlarged but the liver appeared to be under the costal margin. An ill-defined mass was palpated in the upper right abdomen. Examination of the pelvis was not satisfactory because of stenosis of the vaginal and rectal openings.

The patient was a gravida 5, para 3. The menopause occurred 7 years previously. Her past history was negative except for an appendectomy and uterine suspension 3 years ago. Her family history was negative.

On March 8, the patient was admitted to Art Centre Hospital, Detroit. In the period between the initial examination and admission her complaints had not changed except that the abdomen had become larger. Physical examination revealed findings little changed from those of the previous examination except that the chest appeared clear and there was tenderness in the liver area. The abdomen seemed to contain fluid. The blood pressure was 140/72. During her hospital stay the pulse rate remained near 100, the respiratory rate near 20, and the temperature varied from 98.6 to 100 F. The chest and abdomen were x-rayed soon after admission. The heart and great vessels were shown to be normal and, except for moderate bilateral bronchitis, there was no evidence of pulmonary disease. The left hemidiaphragm was elevated and there was a large oval shadow in the left upper abdomen that appeared to represent the enlarged spleen. No evidence of bowel obstruction was present. Marked enlargement of the duodenal loop was noted on roentgen examination of the gastrointestinal tract, suggesting a neoplasm of the pancreas. No evidence of intrinsic organic defect could be seen. Electrocardiographic examination indicated that there was left ventricular preponderance, probably due to hypertrophy, and minimal myocardial damage. It is quite possible that the left axis deviation was caused by displacement of the heart by the enlargements in the abdomen, rather than by hypertrophy of the ventricle.

Laboratory study revealed the following findings: Erythrocytes, 3,900,000; hemoglobin, 75 per cent; leukocytes, 7,100; stab cells, 3; segmented neutrophils, 70; lymphocytes, 26; monocytes, 1. The sedimentation rate (Westergren) was 59 mm. in 1 hour. The Kahn reaction was negative. Nonprotein nitrogen was 38; blood uric acid, 5.2; and blood chlorides, 540. Results of the van den Bergh were: direct, delayed faint reaction; indirect, 0.95; these results were the same on two occasions. Determination of alkaline phosphatase revealed 7.5 Bodansky units. Results of the bromsulfalein test were, in 5 minutes, 63 per cent retention and, in 30 minutes, 13 per cent retention. The Hanger flocculation test was negative. Blood cholesterol was 145; blood protein, 6.45 (albumin, 4.3, globulin, 2.15); blood sugar, 100 mg.; and blood amylase, 40 mg. Urinalysis revealed a specific gravity of 1.012, albumin 1 plus, occasional red and white blood cells, and a large amount of amorphous material. Phenolsulfonphthalein excretion was 20 per cent during the first hour and 19 per cent during the second hour.

The patient was kept at bedrest and given intravenous fluid. This resulted in an increased urinary output and a return to normal in the excretion of phenolsulfonphthalein. The urine continued to have a specific gravity of 1.012 and to show occasional red and white blood cells.

On March 16 the patient underwent an exploratory laparotomy. The surgeon found that the spleen was markedly enlarged, but smooth. The liver was generally enlarged; its edges were rounded and its surface granular. The stomach, gallbladder and upper intestine appeared free of pathology. The entire retroperitoneal area from the brim of the pelvis to the diaphragm was occupied by a firm, but not hard, smooth mass. The overlying structures, such as the mesentery, cecum, and parts of the distal ileum, seemed markedly thickened. The cecum seemed solid. The pelvic organs were stiff but not enlarged. There did not appear to be involvement of the omentum or abdominal wall. The location and general appearance of the mass was suggestive of a hypernephroma. The pancreas could not be identified, perhaps because the growth had crowded above it. The surface of the mass was exposed below the transverse colon and a portion of the mass was excised and sent to the laboratory. The pathologist reported it to be lymphatic tissue.

Approximately a week later the patient was discharged to her home to regain strength before further study was attempted. She received a diet high in protein and carbohydrate. She remained markedly weakened and the ascites, which was moderate at the time of surgery, rapidly increased in amount. On April 12 there was considerable embarrassment of respiration, caused by the large accumulation of fluid

(Continued on page 136.)

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THE VAGUS NERVE AND THE ETIOLOGY AND THERAPY OF PEPTIC ULCER

Peptic ulcer is a disease which has been recognized for centuries and which has been the subject of voluminous writings and the object of numerous forms of therapy ranging from simple diet to complicated drugs and radical surgery and combinations of all three. The great bulk of the literature and the widely varied therapies are without question related to the high incidence of the disease, the insistence of its manifestations, and the lack of knowledge concerning its etiology.

Recently two developments in therapy have produced better than average results and both have suggested the important role of the vagus nerve. Dragstedt[1] introduced complete vagotomy in the treatment of peptic ulcer in 1943. More recently Banthine, an anticholinergic agent which serves to block excess stimuli giving rise to vagotonia, has been used with a high degree of apparent success.[2]

The tremendous interest aroused by the use of complete vagotomy is reflected in the great number of papers which appeared in the first 5 years after Dragstedt's initial work was published. A review[3] of recent literature shows clearly that there is no unanimity of opinion concerning vagotomy—none concerning its indications, its effectiveness, or its mode of action. Many writers report good results of the operation and advocate its use in all types of benign peptic ulcer. Others record good results, but are adversely impressed with the untoward physiologic effects seen in some few cases. Information on the recurrence and persistence of symptoms at varying intervals after operation is now being compiled and the impression is being gained that vagotomy is incomplete in many cases. Some writers advocate vagotomy in combination with gastroenterostomy in duodenal ulcer with cicatricial stenosis; others advocate vagotomy for duodenal ulcer not responding to medical management or manifesting vagal hyperactivity. Many physicians are opposed to vagotomy in gastric ulcer because of the difficulties of differentiating benign and malignant ulcers. On the basis of the evidence so far available it would seem that vagotomy is not a substitute for careful medical management and should not be used indiscriminately. A more prolonged period of observation is necessary before its ultimate value may be assessed and final indications determined.

The use of Banthine in 100 patients[2] with peptic ulcers severe enough to cause the patients to be referred for surgery or with ulcers which had failed to respond to conventional treatment produced good results although Banthine was usually used in lieu of rest, dietetic restrictions, antacids, or other medications. The elimination of conventional restrictions and medical treatment was necessary for study purposes, but is not recommended by the writers as a good general practice. The drug consistently reduces gastric motility, but reduces volume and acidity of secretions less frequently than vagotomy. This fact demonstrates the importance of mechanical factors in the causation of ulcer.

Since surgical treatment of peptic ulcer is accompanied by some risk of mortality and also with postoperative side effects or complications, Grimson and his coworkers[2] conclude that peptic ulcer should be treated medically whenever possible, that most ulcers are amenable to medical treatment, and that Banthine is better than any medicament heretofore available.

The importance of the vagus nerve in relation to peptic ulcer has long been recognized by members of the osteopathic profession and that knowledge has been put to use in the clinical management of the disease. In 1921 C. J. Muttart[4] wrote:

> A brief review of the applied anatomy of the stomach makes clear the mechanism by which ulceration is brought about and may convince some of our critics that osteopathic reasoning is in reality "reasoning". . . . *Cervical, clavicular and upper dorsal lesions* acting through the vagus bring about hypermotility and hypersecretion. . . . Of all the theories advanced, the lowering of vitality, due to lesions of the splanchnics and vagus nerves, remain the most logical.

In 1929, W. W. Pritchard[5] made the following observation:

> In treating diseases of the stomach and duodenum we must remember Dr. Still's famous remark about the rule of the artery being supreme and we must also remember that back of that artery is its nerve supply and without an unimpaired nerve supply the artery cannot function normally . . . . our first consideration must be to look for and correct any atlanto-occipital or atlanto-axial lesions which may be present and disturbing the normal functioning of the parasympathetic fibers which gain distribution to these parts through the vagi.

1. Dragstedt, L. R., and Owens, F. M., Jr.: Supradiaphragmatic section of vagus nerves in treatment of duodenal ulcer. Proc. Soc. Exper. Biol. & Med. 53:152-154, June 1943.

2. Grimson, K. S., Lyons, C. K., and Reeves, R. J.: Clinical trial of Banthine in 100 patients with peptic ulcer. J. Am. M. A. 143:873-877, July 8, 1950

3. Kirsner, J. B., *et al.*: Gastroenterology, a review of literature from July 1947 to July 1948: Vagotomy. Arch. Int. Med. 84:321-331, Aug. 1949.

4. Muttart, C. J.: Diagnosis and treatment of gastric ulcer. J. Am. Osteop. A. 20:485-489, May 1921.

5. Pritchard, W. W.: Some anatomical and physiological considerations of the stomach and duodenum. J. Am. Osteop. A. 29:152-153, Dec. 1929.

In outlining therapy for gastric and duodenal ulcers S. V. Robuck[6] in 1947 said:

> Motion between the occiput and atlas, between the atlas and axis as well as between the axis and third and third and fourth cervicals must be normalized so the flow of cerebrospinal fluid from the cranial vault will not be retarded and the vagus nerve will be free to function automatically.

One of the outstanding advantages that osteopathic manipulative therapy directed toward the vagus nerve has over vagotomy is that its use creates no irreversible change, the outcome of which is unknown. It has recently been pointed out that vagotomy is being undertaken too frequently and too lightheartedly in face of an almost complete lack of knowledge as to its long-term effects. In favor of Banthine it may be said that its results are indeed promising and its use is nonmutilating.

It is the opinion of Grimson and his associates[2] that with better medical treatment the need for and use of surgery will decrease. They also point out that one of the remaining handicaps in the treatment of peptic ulcer is the severe mechanical obstruction at the outlet of the stomach and that perhaps scar tissue can be avoided by the use of a simple therapy of which people can and will make use. Muttart[4] pointed out that the danger of scar tissue is reduced to a minimum in cases managed by osteopathic physicians and given the advantage of osteopathic manipulative therapy.

6. Robuck, S. V.: Osteopathic management of gastric and duodenal ulcers. J. Am. Osteop. A. 46:465-468, May 1947.

MEMBERSHIP AND THE 1951 DIRECTORY

The time is rapidly approaching when listings for the 1951 DIRECTORY will be in the process of being printed. While being listed as a member in the DIRECTORY is but one of the many benefits which accrue to those osteopathic physicians who join their national Association, it is by no means an unimportant benefit. The DIRECTORY year by year becomes increasingly useful as a public relations medium; it is consulted by business organizations, insurance companies, and government agencies.

On September 1 there were 7,893 members of the American Osteopathic Association, a substantial number whose dues and whose loyalties make the Association the effective organization that it unquestionably is. On the same date there were 3,340 nonmembers. The majority of them eligible for membership. From now until the 1951 DIRECTORY goes to press is a good time for members to go to work and reduce the number of nonmembers and simultaneously add to the strength and effectiveness of the A.O.A.

This month in the JOURNAL column of the Committee on Special Membership Effort, Dr. Vincent P. Carroll, President of the American Osteopathic Association, sends his membership message to the profession. Dr. Carroll emphasizes a point which is sometimes overlooked in the quest for new members. He makes it clear that there are few osteopathic physicians who would refuse to become A.O.A. members if they were made to understand the real reasons why they should join, if they were made to realize the personal, the professional, and the public health gains that stem from membership.

Membership in the Association is not only an honor and a privilege afforded only to osteopathic physicians of good repute, but it represents a great bulwark against the infringement of their right to practice as osteopathic physicians. The fundamental motive for joining and maintaining membership in the Association is that of an intelligent self-interest consistent with the welfare of the public.

The American Osteopathic Association is composed of individual members within many divisional societies. The divisional societies are, in the main, well organized and look after the interests of their individual members at the state level. The national Association correlates these activities.

For the most part the national Association concerns itself with our problems at the national level. The various activities are planned and carried through in a manner that will benefit the greatest number of members with a minimum of effort from the individual member.

A glance at the accomplishments of the Association will reveal a surprising degree of success in its endeavors during the past few years. Take, for example, the utilization of osteopathic colleges and hospitals for training of veterans under the GI Bill of Rights, eligibility of osteopathic physicians in the United States Public Health Service and the Veterans Administration, eligibility for examination and treatment of Federal Civil Service employees, eligibility for examination under the Civil Aeronautics Administration, to mention but a few. Of more than passing interest is the eligibility of osteopathic physicians to take care of veterans under the home-town care program of the Veterans Administration. The results speak for themselves.

For those who need to be reminded of not only the desirability, but also the necessity of membership under some circumstances, the following information is given:

To make application for membership in the Academy of Applied Osteopathy, membership in the American Osteopathic Association is a requisite.

To serve as a staff member of a registered hospital or a hospital approved by the A.O.A. for intern training, membership in the Association is necessary.

To be eligible to take any of the specialty board examinations, it is necessary that the applicant have had 3 years of continuous A.O.A. membership immediately prior to application for examination. A.O.A. membership is also a requisite for membership in any of the specialty colleges or societies.

Now is the time for all members to devote themselves to making the membership listing in the 1951 DIRECTORY the largest on record.

E. H. MCKENNA, D.O.

NEW PRESIDENT AT KANSAS CITY COLLEGE

Mr. Joseph M. Peach was inaugurated as president of Kansas City College of Osteopathy and Surgery on September 11. Dr. Kenneth J. Davis succeeded Mr. Peach as dean. Mr. Peach joined the college

faculty in 1926 as head of the chemistry department. He became dean a short time later and held that position until his elevation to the presidency.

ASSOCIATED BILATERAL SACROILIAC MOVEMENT

Much has been written relative to sacroiliac joints, and doubtless the most informative chapters are yet to be inscribed. The more careful students of the pelvis are most prone to avoid expression of opinion on the subject. There are great divergences of belief as to range of movement, forces which bring about sacroiliac movement, and the limits and restraints one sacroiliac joint imposes upon the other. Adequate data are available to support the central idea expressed in the succeeding paragraphs, which are descriptive of a small phase of the problem of associated bilateral sacroiliac movements.

The following statements are referable to normal, usual movements of the sacroiliac joints. This does not mean that unusual movement and movement combinations are not occasionally effected. Sacroiliac lesion, pelvic obliquity, twisted pelvis, or whatever term is used by different writers, presents variations not in accord with these views; but many pelvic faults come within the interpretation of this paper. It is necessary to remember that most lesions of all joints are not displacements beyond the usual ranges of movement for these joints, but are altered mobility within the usual movement ranges. With this idea clearly in mind the normal joint movements become of primary importance. Proper visualization of these movements gives opportunity for two essential considerations; first, since most lesions demonstrate altered mobility within the usual ranges of movement of a joint, classification of sacroiliac lesions is made possible; second, since adjustment includes, in part, inauguration of better movement, and since this can be accomplished only when directed along the planes of movement possible to that joint, it is prerequisite to the evolvement of scientific technic for adjustment.

Movement is normal and present in all sacroiliac joints in good health.

No appreciable unilateral sacroiliac movement normally occurs. Any movement of importance in either joint can only be effected through association of some movement in its opposite. There are many explanations in physics for this phenomenon. These will not be reviewed in this discussion.

The pubes are subject to free movement upon each other, but only of certain types. They cannot be separated, approximated, elevated one upon the other, nor moved forward and backward one upon the other in more than the slightest degree.

The interpubic joint is capable of transmitting force from pubis to pubis without absolute fixation of one innominate with the other. For instance, if one pubis is carried across the midline, is elevated, depressed, drawn backward, or pushed forward, it takes with it the attached pubis of the opposite innominate. Many terms for expressing the normal pelvic movement have been used by different lecturers and writers. One of these will serve in this instance. This is especially true because it permits easy inclusion of the forces which cause movements in the pelvis.

It is easy to consider the movement of the sacrum between the innominate bones. It is important to note that the sacrum is fixed to the lumbar vertebra in approximately the same manner that one lumbar is attached to its adjacent lumbar; and that forces are applied to the sacrum from the lumbar in like manner to that of one lumbar to an adjacent lumbar. Thus the sacrum is considered as a part of the spinal column, and the innominate bones are placed against the lateral sides of the sacrum. When movements of the pelvis and the lower appendages occur upon the sacrum, now considered as a part of the spinal column, the phenomenon of twisting the sacrum between the innominates becomes obvious. Fixation or limitation of this twisting movement is noted as sacroiliac lesion.

Earlier investigators described unilateral displacements of one innominate upon the sacrum. Later students began describing combinations of innominate lesions. Classifications were made, varied, and discarded. New classifications appeared and new terminology followed in never-ending succession. As a result of this heterogeneous nomenclature, characteristic of pelvic lesions, technical discussions are somewhat confused; and because of the confusion this discussion will include no classification. The following statements concerning the changing relationships of innominates upon sacrum in normal pelves are based upon laboratory, x-ray and clinical findings, which have been found to concord in the following respects: the varied applications of forces by which weight and force are transmitted from the vertebral column through the pelvis to the femora bring about a shifting of the sacrum between the two innominates. This shifting or changing relationship resembles a twisting, in that the pubis is carried laterally from the midline of the sacrum. In fact, the sacrum is the structure which moves in relationship to pubes. This twisting, or shifting, is associated with anterior and posterior movements of the iliac crests, or again, the sacrum is moved in relation to the iliac crests.

It has been said, and correctly, that a sacroiliac lesion in which the crest is moved forward in relation to the sacrum is associated with a backward displacement of the opposite crest in relation to the sacrum. From these phenomena it has been concluded that sacroiliac rotations opposite in type are frequently or commonly found in the same pelvis. Such an association always occurs in normal pelves, and a comparable displacement is expected in fixed or semi-fixed pelves in a condition of lesion. It is, therefore, more correct to view this mechanical arrangement with the idea that pelvic movement is primarily sacral between innominates in response to forces transmitted to it from the spine attached to its upper surface.

One of the prominent changes in sacral relationship takes place in this manner: as the sacrum twists, it moves forward on one side, or the innominate moves backward on that side. In so doing, the

pubic bone of that innominate is carried laterally, drawing its opposite with it. Thus the opposite innominate is pulled across the midline in front, and the crest of the innominate appears to move forward in relation to the sacrum. Accurately stated, the sacrum twists, being withdrawn posteriorly on one side in relation with the crest, and being pushed forward on the opposite side. It is well established that the fulcrum of contact of the sacroiliac joint varies. It is believed that the fulcrum shifts, that it is simultaneously high in the joint on one side and at the inferior pole of the joint on the opposite side, and that with each step the pressure contact surfaces change. It is also known that the pubis is elevated and depressed in relation to the sacrum with all pelvic movements and it is thought that the elevations and depressions are determined by the fulcrum contact changes suggested above.

The actual physics of associated bilateral movements is demonstrable and explainable; but this discussion will not attempt to cover the considerably broad field of data and description necessary to complete such a presentation. Further investigation will doubtless clarify many aspects of the physiology of the sacroiliac joint.—Russel R. Peckham, D.O. Editorial reprinted from THE JOURNAL OF THE AMERICAN OSTEOPATHIC ASSOCIATION, October, 1930.

RETROPERITONEAL TUMOR—EVERAL AND McDOUGALL

(Continued from page 132.)

in the abdomen, and ankle edema was noted. The following day abdominal paracentesis was done and a large amount of chyle-like fluid was removed. Papanicolaou stain of this fluid revealed no evidence of malignancy, the cells being mostly lymphocytes, many of which were large and binucleated. Ankle edema quickly disappeared and did not return. It had apparently been caused by pressure of the ascitic fluid on the veins from the extremities.

At this time it was felt that differential diagnosis in this case lay between hypernephroma, lymphosarcoma, and Hodgkin's disease. Metastatic involvement of the retroperitoneal nodes was considered, but a primary site of malignancy had not been demonstrated.

Clinically a tumor of the kidney did not seem likely in the absence of hematuria. It is recognized, however, that renal tumors may be present without this significant finding. It was felt that most of the abnormal urinary findings present were a result of prerenal deviation of water into ascitic fluid and decreased fluid intake due to the discomfort it was believed to cause.

In order to further rule out hypernephroma, or other renal neoplasm, intravenous urography was performed on April 11. This showed satisfactory concentration of the dye in both kidneys, but each kidney seemed to be located further laterally than normal and showed evidence of being rotated on its vertical axis. A lateral exposure was made which showed each kidney to be located in the renal gutter with no anterior displacement. It was then believed that there was sufficient evidence to rule out renal tumor and that the most likely diagnosis was Hodgkin's disease or lymphosarcoma.

Hodgkin's disease is stated to be more common in young adults and persons in middle age, whereas lymphosarcoma is more often seen at the extremes of life. In Hodgkin's disease pruritis is reported to be common, but none was reported in this case. Systemic symptoms in Hodgkin's disease usually occur, not at the time of the initial involvement, but later when generalization develops. This patient had fever, marked weakness, and loss of body tone, but, as far as could be determined, her tumor mass was localized and no other involvement of lymphatic structures could be demonstrated. Finally, the mass, although it was examined only through the peritoneum, was believed to be smooth, as is typical of lymphosarcoma, rather than lobulated, as is more often the case in Hodgkin's disease, and the consistency was firm rather than hard as is characteristic of metastases of malignancies.

A diagnosis of lymphosarcoma of the retroperitoneal lymph nodes was made and the patient was referred to the department of roentgenology for radiation therapy. It was believed that if the mass rapidly responded to small doses of roentgen therapy, the diagnosis would be assured, since lymphosarcoma is known to be extremely radiosensitive with an immediate response, whereas the response of Hodgkin's disease, though marked, is delayed. The patient was given a total of 2000 roentgens to the abdomen, distributed over four ports, right and left anterior and right and left posterior. The dosage was 100 roentgens given every other day, alternate ports being used, over a period of 47 days. The abdominal measurement anteroposteriorly which was 26 cm. at the beginning of treatment decreased to 17 cm. at the end of the course of therapy, an indication of the very rapid response. It was felt that sufficient evidence was present to confirm the diagnosis of lymphosarcoma.

The patient has regained strength and appetite. No further ascites has occurred.

CONCLUSION

In view of our present knowledge of the case, it is felt that the surgical findings of enlarged liver and spleen and thickening of the mesentery, cecum, and terminal ileum were the result of portal hypertension, probably caused by the partial blocking of the hepatic veins by the encroaching lymphatic mass. It is also probable that the x-ray findings, suggesting a pancreatic neoplasm, were a result of invasion of the pancreas by the malignant process, an autopsy finding in such cases. Pressure on the internal iliac (hypogastric) vein could account for the "stiffness" of the pelvic organs.

The above-normal temperature, nervousness, night sweats, and probably the tachycardia were produced by the increased metabolic rate. The chylous fluid in the abdomen may have been due to erosion of the receptaculum chyli or pressure on the thoracic duct.

The prognosis must be very guarded. Although there have been reports of patients who lived 10 years, the usual life expectancy is from 1 to 2 years or less. Radiosensitivity will decrease as fibrosis develops. If ascites continues to develop and requires tapping, the patient's resistance will gradually decrease.

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SPECIAL ARTICLE

The Radiation Hazard

The Atom Bomb*

JOHN POEHNER, D.O.
Chicago

(This paper is based upon lecture notes obtained at a special training course on "The Medical Aspects of Atomic Warfare" given at the Argonne National Laboratories in Chicago, March, 1950, under auspices of The Atomic Energy Commission.)

Nuclear fission producing tremendous amounts of energy and employed as an instrument of war in the form of the atom bomb requires most serious consideration of all peoples. It is particularly important that physicians study and understand the effects of radiant energy upon living tissues.

It has been determined that the maximum effect of the atom bomb blast is best achieved by exploding the bomb at a specific height in air over the target to utilize the maximum distribution of the forces of this tremendous release of energies. If the atom bomb is exploded at ground level there is a certain amount of confinement of the blast by buildings and depressions of the terrain. If the bomb is exploded too high in air some of the physical blast effects as well as thermal effects are dissipated in the air.

With the explosion of the bomb there are three distinct effects, the physical blast wave, the thermal effect, and the radiation effect. This paper deals only with the radiation effect of the atom bomb explosion upon living tissue, and does not discuss the traumatic effects or burns due to the thermal effect. This material concerning the effect of gamma radiation and neutron bombardment of living tissue has been accumulated by the Joint Commission from the investigation of the effect of the atom bomb in Japan and also from experimental studies of laboratory animals at the Argonne National Laboratories in Chicago.

At the instant of detonation an enormous amount of radiant energy composed of gamma rays and fast neutrons is released almost instantaneously, the intensity of the radiation being far greater than one can imagine. The effect of this type of radiation is to some extent governed by the distance of the victim from the source of the radiant energy and also by the type and thickness of various materials which may stand between the victim and the blast. The penetrating ability of the gamma radiation and fast neutrons is enormous; ordinary brick and cement buildings offer only slight protection to the inhabitants. Wooden frame houses offer little or no protection. The intensity of the radiant energy diminishes with the increase in the distance of the victim from the source.

As determined by studies of the Nagasaki and Hiroshima blasts in Japan, there appeared to be a central zone of the target area with a radius of approximately 2 to 2¼ miles, or a total of approximately 13 square miles of almost complete annihilation and disintegration. Casualties numbered approximately 100 per cent in this area. Adjacent to the central "zone of brissance" and extending to a point approximately 3½ to 4 miles from the center of the bomb blast was an area wherein approximately 50 per cent of the casualties died from all causes. Beyond this second zone and extending to a distance of approximately 4 or 5 miles from ground zero the seriousness of the wounds and burns received diminished as the periphery was approached.

Following a catastrophe of such magnitude and with the establishment of first aid stations and points of triage, it would become the duty and obligation of physicians to differentiate the types of injuries suffered by the victims and to classify those with probable or actual radiation exposure in an attempt to determine which cases deserve and require first attention. It is, therefore, necessary that some criteria be established whereby those victims who suffer a probable lethal dose of radiation may be segregated from other victims suffering a less than lethal dose so that the energies of the attending physicians could be directed toward treating patients with the greatest chance of recovery.

This paper will be limited to a discussion of the criteria for diagnosis of radiation injuries of that group of individuals who have the greatest probable chances for recovery, victims in zone 2 and those farther away from the zero point who have probably received less than a lethal dose of radiation.

There are three types of radiation injury: (1) Uncomplicated radiation injury, (2) radiation injury complicated by infection, (3) radiation injury complicated by other injuries.

The classification of the clinical types of radiation syndrome are:

1. *Very Severe Radiation Injury.*—Approximate mortality of this group is 100 per cent. Death usually occurs in 1 to 2 weeks. Nausea and vomiting occur the day of bombing and are severe. Leukopenia becomes marked within 24 hours. Epilation and purpura develop if the patient survives long enough. The distance of these victims from the bomb is usually less than 1,000 meters.

2. *Severe Radiation Injury.*—The approximate mortality in the group is 50 per cent. Death may occur in from 3 to 6 weeks. Nausea and vomiting are marked the day of the bombing and leukopenia becomes marked in 24 hours. These victims are usually 1,000 meters from the bomb explosion. Epilation, purpura, and oropharyngeal lesions become severe if the patient survives long enough for these signs to develop.

3. *Moderately Severe Radiation Injury.*—The approximate mortality is 10 per cent. Death may occur in from 6 to 15 weeks. Nausea and vomiting are only moderate the day of the bombing. Leukopenia is moderate as is epilation and purpura. Oropharyngeal inflammation may be negligible. These victims are approximately 1,000 to 1,500 meters from the bomb.

4. *Mild Radiation Injury.*—Death usually is not due to radiation. Nausea and vomiting, should they occur the day of bombing, are only slight. There is only slight depression of the white cells and the development of epilation and purpura is improbable. Oropharyngeal inflammations usually do not develop. These patients are more than 1,500 meters from the bomb explosion.

*Presented at the Fifty-Fourth Annual Convention of the American Osteopathic Association, Chicago, July 14, 1950.

From the above it appears that the specific criteria for diagnosis for radiation injury are *epilation* and *purpura*. There are three suggestive symptoms which may be of some assistance in determining the amount of radiation injury a victim has received the day of the bombing, or shortly thereafter, namely, *vomiting, oropharyngeal lesions* (pain, ulceration, necrosis), and *hemorrhagic manifestations other than purpura* (e.g., bloody diarrhea).

Experimental whole body irradiation of laboratory animals employing a dose of radiation that kills one-half of the total number of animals in 30 days time ($L D_{50}$) reveals the following findings:

1. There is an initial depression of radiation sickness.
2. The lymphocytes decrease rapidly within 24 hours to the lowest level to which they will fall.
3. Ulceration of the oral cavity and intestinal tract is almost universal. There are edema and hemorrhagic phenomena.
4. At later stages there may be:
   a. Increased infections and absorption of toxic materials
   b. Increase in the sedimentation rate
   c. Shift of the plasma proteins to the alpha and beta globulins
   d. Elevation of the pulse, respiration, and temperature.

When laboratory animals die as a result of whole body irradiation, they usually die in shock. Hemorrhages occur from bowel or body orifices and sometimes in the central nervous system. There is a severe effect upon the blood-vascular system. Secondary invasion of infectious organisms probably produces many of the symptoms of the radiation syndrome.

The peripheral blood stream is not a very sensitive means of determining the dosage of irradiation received by the atom bomb victim unless the dose is extremely high. It appears to be an impractical procedure to obtain blood counts on the victims of an atomic blast immediately following the explosion, particularly in view of the inadequate or absent laboratory facilities.

Living tissue is either radioresistant or radiosensitive. In general, the younger the animal is the more susceptible he is to radiation. The more primitive the cell in a given cell lineage the more sensitive it is to radiation, with few exceptions. The radioresistant tissues are the nervous system, the muscular system, the liver, the pancreas, and the kidney. The radiosensitive tissues are blood-cell forming and germinal tissues, the lining of the intestinal tract, and the skin and its derivatives.

The time of onset of clinical symptoms following radiation exposure is very helpful in determining the probable amount of radiation received by a particular victim. With very severe radiation injury nausea and vomiting occurs the day of the bombing. Fever develops in from 2 to 7 days. Diarrhea occurs in 2 to 7 days as does leukopenia. Purpura is observed to develop in 4 to 14 days and death usually occurs during this period.

With moderately severe radiation injury nausea and vomiting are apparent the day of the bombing. Leukopenia develops between the seventh and the twenty-eighth days and anemia is observed to develop within the period from the fourteenth to the thirty-fifth day. Epilation occurs during this period and oropharyngeal inflammations are observed to develop from the fourteenth to the twenty-eighth day. Diarrhea occurs during this period and death usually follows in from 30 to 90 days.

The time of onset of significant symptoms is extremely important in the differentiation of radiation injury. Nausea and vomiting, which usually occurs the first day, may develop during the first three or four days. Epilation usually occurs by the twentieth day, but may be seen from the first to the fourth week. Oropharyngeal lesions usually occur by the twenty-second day but may develop any time from 2 to 5 weeks. Purpura and hemorrhage, usually seen by the twenty-fourth day, may occur from 2 to 5 weeks following injury.

SUMMARY

Nuclear fission releases tremendous amounts of ionizing radiation in the form of gamma rays and fast neutrons, which are extremely penetrating. The dose of radiation received is determined by the distance from the bomb explosion and the type and thicknesses of materials which may shield the victim. The intensity of the radiation decreases as distance from the source of the radiant energy increases. Brick and cement buildings offer some slight degree of protection, but wooden buildings offer little or no protection.

It is important to differentiate the class of victims who have received probable lethal doses from the group which has received less than lethal doses of radiant energy in order that the energies of the physician may be devoted to the care of those with the greatest probable chances of recovery.

The outstanding clinical signs of radiation exposure are nausea and vomiting the day of the bombing and the time of onset of other symptoms following the bomb explosion. Epilation and purpura are specific symptoms of radiation injury and follow at a later date.

Decrease in the total lymphocyte count of the peripheral blood stream is quite significant. Death of the patient may result from secondary invasions of infectious organisms even where the victim has received less than a lethal dose of radiation.

Whole body irradiation is far more injurious than partial body irradiation.

5250 S. Ellis Ave.

PARTICIPATION IN CIVIL DEFENSE

Every person and every community has a part to play in the civil defense program. Remoteness from places considered probable targets does not exempt any community from playing its part in the over-all program, since evacuee reception and care must be planned, and a support program organized.

The civil defense program for this country must be in constant readiness because for the first time in 136 years an enemy has the power to attack our cities in strong force, and for the first time in our history that attack may come suddenly, with little or no warning.

Granted a few minutes warning, casualties could be reduced by over 50 per cent through proper organization and training in civil defense. More important, civil defense could spell the difference between defeat with slavery for our people and victory in a war thrust upon us.—United States Civil Defense. Issued by National Security Resources Board, U. S. Government Printing Office, Washington, 1950.

Department of Professional Affairs

ALLAN A. EGGLESTON, D.O.
Chairman
Montreal, Canada

COMMITTEE ON SPECIAL MEMBERSHIP EFFORT

STEPHEN B. GIBBS, D.O.
Chairman
Coral Gables, Florida

THE PRESIDENT'S MEMBERSHIP MESSAGE

I want to take this opportunity to thank Dr. Stephen B. Gibbs of Coral Gables, Florida, specifically, for the magnificent effort he put forth to raise the membership of the American Osteopathic Association to its highest level. He is to be congratulated roundly. He has had excellent cooperation from his Committee and from the Central Office. Miss Caroline Wells and her staff deserve equal credit for coordinating the work of the Membership Department with that of the Committee on Special Membership Effort. We have forged ahead in our membership effort because of the constant vigilance and devotion to duty of the Committee and the Department.

I believe also that the increased membership signifies that the profession as a whole has awakened to the fact that better and more concentrated organization is needed. Members have become aware of the importance of enlisting every eligible osteopathic physician in one great organization, so that all available energy can be unified and utilized to the best advantage of the public health and for the education of the people concerning the osteopathic school of medicine.

A great man long ago said in substance, "Eternal vigilance is the price of liberty." Few statements could have more meaning for the osteopathic profession. We could never have accomplished even a minute part of what has been accomplished if we had not been organized for vigilance. Through our organization we have been able to prove that we are sincere and conscientious and are able to do a good job of rendering a service for the public good, a service to promote the general welfare and to improve the general health.

If we look at the records and see the recognitions we have been accorded in the past few years by federal, state, and local governments, if we look at our colleges and hospitals, we cannot help but swell with pride. We are leaders in caring for the health of the American people. We can only stay in that position if we continue to improve ourselves, to improve our institutions, and improve our organization. We must continue to sacrifice; we must continue to educate the public. But first of all we must continue to educate our own people.

The most unfortunate thing that I can think of is that there are osteopathic physicians who are privileged to be members of the American Osteopathic Association and yet neglect or refuse to accept that privilege. Let each member appoint himself as a special membership committeeman, not to coerce these physicians into becoming members, but to talk to them, to counsel with them, and to educate them. If, after one discussion, they do not feel that they want to become one of us, let us not crowd them or try to exercise force. But let us see them again and again and again, not with the idea that eventually they will become members because they are tired of listening to us, but with the idea that if they are made to understand why they should be members, they will become members. I am sure this type of effort will bring results.

In this Membership Year of 1950-51, I know that each of you will make every effort possible to see that we get a great majority of our profession into the American Osteopathic Association before the end of the year.

VINCENT P. CARROLL, D.O.

MEMBERSHIP REPORT AS OF SEPTEMBER 1, 1950

Membership count, August 1, 1950		7,863
Applications received in August, 1950	17	
Licensed in August, 1950	25	
	42	
Deaths and resignations in August, 1950	12	
Gain in August, 1950		30
Membership count, September 1, 1950		7,893

HONOR ROLL

J. Myron Auld
W. C. Bugbee
Rocco Cleffi
J. Claver Gargill
W. H. Lum
Dorothy J. Marsh
George W. Northup
Georgianna Pfeiffer
Luther W. Swift

OFFICE OF EDUCATION

LAWRENCE W. MILLS
Director
Chicago

OBJECTIVES OF OSTEOPATHIC EDUCATION

The objectives of osteopathic education could be divided into two categories. The first might well be called academic objectives in the training of osteopathic physicians, and the second, the personal objectives in the training of physicians who will be active in their professional organization.

What are the academic objectives of osteopathic education? The established purpose of the colleges of osteopathy was expressed in the petition for the charter of the first college of osteopathy, in Kirksville, in 1892, to the State of Missouri: "The purpose and object of this association shall be to improve our systems of surgery, midwifery, and treatment of general disease."

It is the primary aim and purpose of the osteopathic colleges to preserve, emphasize, and extend in their teaching and research those values, principles, and precepts that distinguish the osteopathic philosophy and practice of the healing art.

It is the further aim and purpose of the colleges to provide a full and complete curriculum of modern professional education so that their graduates shall be adequately trained and equipped as osteopathic physicians and surgeons, competent to cope with the problems of prevention, diagnosis, and treatment of disease generally.

Osteopathic education stresses the importance of normal body mechanics to the health of an organism and emphasizes the utilization of manipulation to detect and correct faulty structure. All measures that have proved to be effective in detecting and correcting faulty relations of bones, muscles, blood vessels, nerves, and other tissues, which malrelations are recognized as factors in disease, are taught.

All procedures of medical science, such as surgery, obstetrics, the use of drugs, physical therapy, and other diagnostic and therapeutic technics are embraced in osteopathic education.

Manipulative methods of diagnosis and treatment are osteopathy's outstanding contribution to the healing arts and the training of osteopathic physicians therein is not duplicated in any other school of medicine.

It is not only the purpose of osteopathic education to train physicians qualified as family doctors, but to train

physicians who can participate in professional affairs as well. Osteopathic college committees, who deal with entrance requirements, are convinced that a good general education in the preprofessional college course, which includes the minimum of introductory sciences, is the ideal training for students who are planning to become physicians. Reading comprehension and the ability to use the English language in written or oral form are tremendously important not only in the professional course, but in the physician's private practice following his formal training.

The great scientific era, which rapidly opened its doors to the mind of man in the early part of the twentieth century, resulted in emphasizing formal scientific education. As exploration of the realm of science increased, information in the field of physics, chemistry, and biology grew by leaps and bounds. It can safely be said that a high school student of the last decade was presented with more scientific information in the fields of physics and chemistry than the university student was given 30 years ago in introductory courses.

With the accumulation of scientific data and facts, medical educators increasingly saw the necessity of requiring more and more preprofessional training prior to the entrance of a student to medical college. The medical colleges themselves constantly increased the time and emphasis on the so-called basic science curricula.

By the fifth decade of the twentieth century educators had become very critical of the shortcomings of the educational program of medical schools. Some of these criticisms were directed toward the fact that it was apparent that some medical schools were attempting to train scientific researchers and specialists instead of training general practitioners.

It is quite likely that the rapidly growing accumulation of scientific data has resulted in the emphasis on training scientists rather than physicians, and that this has resulted in the diminishing of time spent in the practical demonstration of disease and its treatment.

The curriculum in the average college of the healing arts now consists of 2-years' training with the chief emphasis on the so-called basic science subjects and 2 years devoted largely to clinical and hospital instruction. Meanwhile educators in the healing arts have gradually begun to realize that a great deal of the training that doctors had received a hundred years ago as apprentices, under the preceptor plan, has its place in modern medical education.

At a recent conference with a committee representing the deans of 400 colleges of arts and sciences, representatives of the osteopathic profession pointed out that one of the chief weaknesses of entering students in approved colleges of osteopathy and surgery is the lack of reading comprehension and the ability to use the English language. This is no fault of the liberal arts colleges, where the professional students receive their preprofessional training. For the most part, it is due to the fact that the average student interested in preparing for entrance into a school of the healing arts is very apt to be scientifically minded to the extent that he overemphasizes the fields of chemistry, biology, and physics. Such a student has usually shied away from courses in literature, history, sociology, and the other humanities.

Such students could be taken care of in any one of the number of colleges and universities, which now are requiring 2 years of general education, before allowing the student to choose his field of specialization.

It is believed that English is an important tool for the physicians who are to be recognized as professional men. Osteopathic colleges are interested not only in giving the necessary academic training in preparing a student for practice, but also are interested in inculcating the desire on the part of the student to become active in organizational work of his profession rather than to become an isolationist.

Every professional body has many men who are little more than technicians. No professional body can be strong unless it contains a substantial number of members who are willing to accept the obligation of service beyond their actual daily duties. The osteopathic profession, as small as it is, has been strong from the start because it contained a high proportion of physicians with an active interest in the profession.

It is up to the colleges and members of the profession to teach the students that full professional life cannot be achieved in isolation. Some aspects of professional life are essentially individual, but many others are group relations.

Every calling has its round of tasks and duties and its code of man-to-man relations, which one must follow daily if he is to survive. Beyond that is the opportunity for a man in any vocation to strive for special excellence and to seek something other than material gain.

Suppose a physician were to say, "I'll be a 'professional man,' but I'll do it myself. I hate organization dues and duties." That physician would take the head without the body that nourishes it.

Suppose another physician were to say, "Oh, I'll join all right, but I'll never do anything about it." That physician would grasp the form and let the substance go.

Let us take a brief look at those characteristics which mark off the physician who is active in his professional organization from the physician who is an isolationist:

First, osteopathic physicians who are active in organizational work possess a constant recognition of their social duty. They guard the ideals and standards of their profession by advancing it in public understanding and esteem. They render free public service in addition to that for ordinary compensation. They make a fair return to the society which has recognized their status.

Second, the organized group alone has the recognized responsibility of ordering the educational program. The educational program of the osteopathic school of medicine, in turn, is based on a body of scientific knowledge and skill which is constantly being advanced by the united effort of this professional group.

Third, establishing a standard of personal qualifications for admission to the professional group, based on character, training, and proved competence is a great responsibility of osteopathic physicians, who are professional people. In the same way a standard of conduct, based on the courtesy, honor, and ethics which guide the practitioner in his relations with patients, colleagues, and public can be formulated only by the professional group.

Finally, formal recognition of the profession's status by the federal government and state and educational agencies is won only by the united efforts of the true *professional* physicians.

In the admissions programs of the osteopathic colleges many of the qualities which are necessary in a professional man or woman are carefully looked for in the screening of a candidate. In fact these qualities are considered to be just as important as the academic background which the applicant presents.

SPECIALTY SOCIETY MEETINGS

The *American College of Osteopathic Surgeons* will hold its twenty-third Annual Clinical Assembly in Des Moines, Iowa, October 15 to 19. Participating in the meeting will be the American Osteopathic Academy of Orthopedists, the American Osteopathic College of Radiology, the American Osteopathic Hospital Association, and the American Society of Osteopathic Anesthesiologists. The formal opening, a combined meeting for all the members of the participating groups, will take place on October 15, with the Honorable William S. Beardsley, Governor of the State of Iowa, delivering the opening address.

John P. Schwartz, Des Moines, is general chairman for the meeting with Howard A. Graney, Des Moines, acting as program chairman for the College of Surgeons, D. W. Hendrickson, Wichita, Kansas, for the College of Radiology, Mr. Edward C. Barron, Detroit, for the Hospital Association, and Carl E. Schefold, Detroit, for the Society of Anesthesiologists.

The *American College of Osteopathic Internists* will meet in Kansas City, Missouri, October 23 to 26. Stuart Harkness, Des Moines, is the program chairman.

The regular business meeting and the election of officers will be held on October 25 at 8:00 p.m.

The *Osteopathic College of Ophthalmology and Otorhinolaryngology* will meet in Los Angeles October 30 to November 4. Edward W. Davidson, Los Angeles, is program chairman.

Department of Public Affairs

JOHN W. MULFORD, D.O.
Chairman
Cincinnati

BUREAU OF PUBLIC EDUCATION ON HEALTH

JOHN P. WOOD, D.O.
Chairman
Birmingham, Mich.

PUBLIC TAX-SUPPORTED HOSPITALS

Today the majority of American citizens realize the need for adequate hospital facilities to provide care for the sick and injured. In recognition of this need for additional hospital facilities, the federal government has made tax funds available to the states for hospital construction and expansion under the provisions of the Hill-Burton Hospital Survey and Construction Act. Most state governments have appropriated public money to implement the federal grants. This program was developed to improve the facilities for health care available to the people, and was not intended for the benefit of any one class, race, creed, or color.

The facilities of hospitals constructed with tax funds should be available to all of the people on an equitable basis. Any hospital rules, regulations, or decisions which deny to a patient the services in that hospital of the qualified physician of his choice solely because the physician does not possess the degree of Doctor of Medicine is discriminatory, not in the best interest of the people's health, and contrary to fundamental American principles. A program whereby osteopathic patients and their physicians have been denied access to hospital facilities has been adopted and pursued by the American Medical Association for over 20 years. This program has not been pursued in the best interests of the public's health, but rather, physicians of the allopathic school of medicine have sought to insure for themselves a monopoly on the right to use tax-supported hospitals. These physicians are reluctant to share the facilities which have been provided at taxpayers' expense with equally qualified practitioners representing another complete school of the healing art.

During the past 75 years the osteopathic profession has developed from its infancy until today there are over 11,000 osteopathic physicians, 164 registered hospitals, and over 8,000 available beds in osteopathic hospitals. These 11,000 osteopathic physicians, representing a complete school of medicine, constitute a minority group when compared with the some 200,000 allopathic physicians located in the United States today. Osteopathic hospitals have not been constructed with public tax funds, but have been independently financed and developed by members of the osteopathic profession to meet the need of the people for additional hospitals. In spite of this significant advancement, many members of the osteopathic profession continue to find themselves and their patients handicapped by a lack of hospital facilities. In the areas where osteopathic institutions are not available, osteopathic physicians find themselves and their patients without the benefit of hospital facilities because the rules and regulations adopted by both private and public hospitals have acted in most cases to deny osteopathic patients and their physicians access to these hospitals.

I. STANDARDIZATION OF HOSPITALS

A. *American College of Surgeons.*—

Before the adoption of standardized rules and regulations for the administration and operation of both private and public hospitals, the right of all qualified physicians, including osteopathic physicians and surgeons, to practice in such institutions was generally recognized and seldom subject to question. The movement toward hospital standardization was first instituted in 1918 by the American College of Surgeons, an organization founded in 1913 by allopathic surgeons of the United States and Canada. This organization has for its purpose the improvement of operative surgery. The American College of Surgeons established as one of its major requirements for fellowship that a candidate submit evidence of 100 patients upon whom he had operated. Since hospital records were inadequately maintained at that time, making it difficult to obtain the information required for fellowship, the hospitals were encouraged to improve their system of administration and to apply certain fundamental principles to insure the efficient care of the sick and injured.

In 1918 the American College of Surgeons established the "Minimum Standard for Hospitals" with which a hospital was required to conform prior to receiving recognition as an "approved" hospital. The general principles of the "Minimum Standard for Hospitals" provide as follows:

MINIMUM STANDARD FOR HOSPITALS

1. That physicians and surgeons privileged to practice in the hospital be organized as a definite medical staff. Such organization has nothing to do with the question as to whether the hospital is open or closed, nor need it affect the various existing types of medical staff organization. The word staff is here defined as the group of doctors who practice in the hospital inclusive of all groups, such as the active medical staff, the associate medical staff, and the courtesy medical staff.

2. That membership upon the medical staff be restricted to physicians and surgeons who are (a) graduates of medicine of approved medical schools, with the degree Doctor of Medicine, in good standing, and legally licensed to practice in their respective states or provinces; (b) competent in their respective fields; and (c) worthy in character and in matters of professional ethics; that in this latter connection the practice of the division of fees, under any guise whatsoever, be prohibited.

3. That the medical staff initiate and, with the approval of the governing board of the hospital, adopt rules, regulations, and policies governing the professional work of the hospital; that these rules, regulations, and policies specifically provide (a) that medical staff meetings be held at least once each month; (b) that the medical staff review and analyze at regular intervals their clinical experience in the various departments of the hospital, such as medicine, surgery, obstetrics, and the other specialties; the medical records of patients, free and pay, to be the basis for such review and analysis.

4. That accurate and complete medical records be written for all patients and filed in an accessible manner in the hospital, a complete medical record being one which includes identification data; complaint; personal and family history; history of present illness; physical examination; special examinations, such as consultations, clinical laboratory, x-ray, and other examinations; provisional or working diagnosis; medical or surgical treatment; gross and microscopical pathological findings; progress notes; final diagnosis; condition on discharge; follow-up; and, in case of death, autopsy findings.

5. That diagnostic and therapeutic facilities under competent medical supervision be available for the study, diagnosis, and treatment of patients, these to include at least (a) a clinical laboratory providing chemical, bacteriological, serological, and pathological services; (b) an x-ray department providing radiographic and fluoroscopic services.

Provision number two of the "Minimum Standard for Hospitals" prevents physicians and surgeons holding the degree Doctor of Osteopathy from becoming members of the medical staff because the staff is restricted to "graduates of medicine of approved medical schools with the degree Doctor of Medicine." The medical staff is granted authority by section three to make necessary rules and regulations to govern the professional work in the hospital. Hospitals, in order to meet these requirements and to secure approval by the American College of Surgeons, have excluded osteopathic physicians and surgeons from the medical staff of the hospital.

The American College of Surgeons has stated it is advantageous to the patient, physician, hospital, intern, and nurse and to the community for a hospital to be on the approved list. The advantages of a hospital standardization program are recognized to the extent that such program results in the efficient organization of a medical staff and the proper administration of the hospital, including the maintenance of adequate records. A standardization program ceases to promote the welfare of the sick and injured when it adopts a discriminatory policy limiting membership upon the medical staff to persons possessing the degree Doctor of Medicine. Qualified physicians and surgeons, graduates of a school granting a degree other than that of Doctor of Medicine, should not be restricted from membership on the medical staff of a hospital solely by reason of the degree which they possess.

B. *Council on Medical Education and Hospitals of the American Medical Association.*—

The Council on Medical Education and Hospitals of the American Medical Association has also played a significant part in the hospital standardization program. The hospital program was pursued by the A.M.A. in connection with its program for the improvement of medical education. In the early 1900's, the need for a period of hospital internship training between medical school graduation and the licensure examination was recognized, but in 1913 no medical schools or state examining boards required an internship for the degree Doctor of Medicine or for licensure.

In 1912, the Council on Medical Education and Hospitals of the American Medical Association began its first survey of hospitals engaged in the training of interns. It was not until 1928 that the House of Delegates of the American Medical Association approved a general program of hospital standardization. This program was instituted by the adoption of certain requirements which were known as the "Essentials of a Registered Hospital." A hospital conforming to these essentials may be registered with the Council on Medical Education and Hospitals. Registration is a basic type of recognition which is extended to all hospitals and related institutions which conform with the "Essentials of a Registered Hospital." Title III of these Essentials provides for the medical staff as follows:

1. Since the medical staff is the most important factor in the delivery of medical service to patients, too great care cannot be exercised in the selection of staff members. The staff should be limited to physicians holding the degree of *doctor of medicine* from medical colleges acceptable to the Council on Medical Education and Hospitals, having satisfactory qualifications as to training, licensure, and ethical standing, and to dentists who are graduates of recognized dental colleges and whose professional ability and standing are known to the medical staff.

2. *Osteopaths,* chiropractors, and other non-medical practitioners may not be permitted to use the facilities of hospitals desiring to conform to these standards. *They* may not enter data on the records, carry out diagnostic procedures or treatments, or in any way assist in this work.

These specific provisions cited above have been used to exclude osteopathic physicians from hospitals which have sought registration with the Council on Medical Education and Hospitals of the A.M.A.

In addition to registration, hospitals may seek "approval" by the Council. "Approval" is only extended to registered hospitals which meet the established requirements for internship, residency, or fellowship training. Therefore, a hospital must conform with the "Essentials of a Registered Hospital" and limit the facilities of that hospital to doctors of medicine before it may become a hospital approved for intern training, residencies, or fellowship training. Since the laws in twenty-three states and the District of Columbia require an approved internship as a prerequisite to licensure, applicants for a license to practice medicine and surgery may serve their internships only in hospitals which are approved. In practice, the state medical examining boards have recognized as approved only those hospitals approved by the Council on Medical Education and Hospitals of the American Medical Association; therefore, hospitals desiring to establish a program for interns and residents were compelled to seek registration and approval by the Council of the A.M.A. As indicated above, the standards adopted by the Council of the A.M.A. and the American College of Surgeons have acted and were specifically intended to exclude all but doctors of medicine from all registered and approved hospitals. It is to be noted that hospitals are not classified as Class A, Class B, and Class C, but to the contrary, hospitals listed with the A.M.A. are either "registered" or "approved," the latter including registration.

The programs established for specialty training and certification by a specialty board require training in a specialized field of medicine in a hospital approved for such training. These hospitals must be registered hospitals conforming with the "Essentials of a Registered Hospital" before approval is granted for specialty training. Since only specialty training in approved hospitals is accepted for certification, hospitals which desire to follow a program of residency and fellowship training are handicapped in securing persons to occupy these positions unless the hospital program is recognized as approved. The first step towards securing full approval is registration with the Council on Medical Education and Hospitals and results in the exclusion of physicians and surgeons holding a degree other than M.D. from the hospital in order to conform with the provisions of the "Essentials of a Registered Hospital" of the A.M.A.

C. *American Hospital Association.*—

The American Hospital Association is an association of registered hospitals. This organization has not been instrumental in promoting a hospital standardization program, but to the extent that it appears to require as a prerequisite to membership that a hospital be registered with the Council on Medical Education and Hospitals of the American Medical Association, it also acts to insure the exclusion of osteopathic physicians and surgeons from member hospitals.

D. *The American Osteopathic Association.*—

The American Osteopathic Association, realizing the value of a hospital standardization program, has developed through its Bureau of Hospitals its own standards for registration and approval of hospitals for intern and residency training. In 1950, 192 osteopathic hospitals were registered with the Bureau of Hospitals, sixty-three were approved for intern training and thirty-three for residency training.

The hospital program of the American Osteopathic Association in contrast to that of the American Medical Association has endeavored to preserve the right of the people to the services in any hospital of the physician of their choice. Although the "Minimum Standard for Registered Hospitals" adopted by the American Osteopathic Association was designed primarily for osteopathic institutions, dentists or doctors of medicine are eligible for courtesy staff privileges in hospitals registered with the A.O.A. Item twenty-two of the "Minimum Standards for Registered Hospitals" provides in part as follows:

22. Courtesy staff privileges may be accorded physicians and dentists who are members in good standing of the American Medical Association, American Institute of Homeopathy, or the American Dental Association, and their component societies, each in his proper category.

Dentists or doctors of medicine may also be members of the courtesy staff of osteopathic hospitals approved for intern training. The "Minimum Requirements and Standards for Osteopathic Hospitals Approved for Intern Training and Residency Training" permits surgical staff privileges to be extended to physicians possessing the degree Doctor of Medicine and also to dentists. Item one, page seven, under "Special Required Staff Procedures" provides in part as follows:

Surgical staff privileges may be accorded physicians and dentists who are members in good standing, each in his proper category, of the American Medical Association, American Institute of Homeopathy, or the American Dental Association, and their component societies.

Under these standards an osteopathic hospital may permit a patient to have the services of a doctor of medicine in the hospital and not affect its standing with the American Osteopathic Association. It is unfortunate that the hospital standards of the American College of Surgeons and the American Medical Association do not also recognize the paramount right of the patient to the services of the qualified physician of his choice in the hospital most convenient for the patient. The hospital standardization programs pursued by the American College of Surgeons and the American Medical Association have not acted for the best interests of the people, but to the contrary they have been designed to establish and maintain a monopoly of hospital facilities for doctors of medicine. This is especially true in public hospitals which are established and maintained by taxes paid by all of the people but which limit the facilities of these institutions to patients of doctors of medicine who are provided "workshops" at the public's expense. By limiting the use of the facilities of hospitals registered with the A.M.A. or approved by the American College of Surgeons to doctors of medicine, the taxpayers who prefer the services of a doctor of osteopathy are inconvenienced by a lack of hospital facilities where osteopathic institutions are not available. This restriction is contrary to public policy which requires that every hospital program be planned to improve and expand hospital and medical services available to all of the people.

II. PUBLIC HOSPITALS

A significant portion of all health care received by the people is rendered in tax-supported or government hospitals. Of the total of 1,423,520 hospital beds available in the United States in 1948, 1,019,767 were in public or government hospitals. In comparison, only 403,753 beds are available in private hospitals. These figures reveal the role that government hospitals are playing in making hospital care available to the people.

During the past decade, the attention of the people has been focused on the shortage of hospitals and related facilities. A realization by the people of the benefits of hospital care over the care received in the home has resulted in an increased use of hospital facilities. This increased use and growing population has resulted in a hospital shortage which first received legislative recognition by the Federal Government in the "Hospital Survey and Construction Act," passed in 1946, and commonly referred to as the Hill-Burton Act.

A. Hospital Survey and Construction Act of 1946.—

The Hospital Survey and Construction Act (Public Law 725, 79th Congress) required each state seeking federal funds for hospital construction under this federal program to conduct a hospital survey and submit a plan for approval to the Surgeon-General of the United States. By June 30, 1949, all states had completed a survey and submitted plans. The survey revealed that 850,000 additional hospital beds were required to afford the necessary facilities for furnishing adequate hospital, clinic, and similar services to all of the people.

The responsibility for initiating a hospital construction program is placed upon the individual state which must develop a plan and submit it for approval to the Surgeon-General. The state plan must include a single state agency which will have authority to supervise and administer the plan. A state advisory council composed of representatives of nongovernmental organizations and of state agencies must also be established. The plan must set forth the hospital construction program based upon a state-wide inventory of existing hospitals and survey of needs. The Hill-Burton Act requires that the state plan be nondiscriminatory as to race, creed, or color in the furnishing of needed hospital services to persons unable to pay. The state must also provide minimum standards for the maintenance and operation of hospitals which receive federal aid. Upon approval of the plan, the state is eligible for its alloted percentage of available funds.

There is no provision in the Hill-Burton Act which in any way limits the participation of the osteopathic profession in this hospital construction program. The right of osteopathic physicians and surgeons to use the facilities of hospitals constructed in part with Hill-Burton funds is a matter to be decided at the state level. At the time of the senate committee hearing concerning the Hill-Burton Act, the senate committee considering the bill reported to the United States Senate that "questions such as the place of osteopathy in general hospital service would be determined by state law." (Senate Report 674, 79th Congress.)

The Hill-Burton Act authorized the Surgeon-General with the approval of the federal hospital council and the administrator to prescribe certain general rules and regulations. The reference which was made in the original regulations promulgated by the Surgeon-General to the standards of the American Medical Association was later deleted. This deletion from the regulations removed the only possible limitation on the right of all qualified physicians and surgeons to participate in this program. In a letter dated April 8, 1949, the Surgeon-General stated that there was nothing in the regulations or policies governing the administration of the Hospital Survey and Construction Act which would prevent federal approval of hospital projects where the medical staff would be composed of doctors of medicine and doctors of osteopathy.

By January, 1950, 1,019 construction projects had been approved for federal grants under the Hill-Burton Act, with 139 completed. Among the projects approved were two for the expansion of osteopathic hospitals. A federal grant of approximately $250,000 was approved for the $750,000 expansion program of the osteopathic hospital located at Kirksville, Missouri. A federal grant was also approved for the Osteopathic Hospital of Rhode Island, located at Cranston, Rhode Island. Other osteopathic applications have since been submitted for approval. Since no provisions of the federal law and regulations restrict the osteopathic profession in its participation under this program, and furthermore since section 635, Public Law 725, 79th Congress, provides for the state control of the operations of the program as follows:

> Except as otherwise specifically provided, nothing in this title shall be construed as conferring on any federal officer or employee the right to exercise any supervision or control over the administration, personnel, maintenance, or operation of any hospital with respect to which any funds have been or may be expended under this title.

the right of osteopathic physicians to use the facilities of hospitals constructed with federal and state funds is determined at the state, county, or municipal level.

B. State Laws Relating to Tax-Supported Hospitals.—

1. State Hospital Licensing Laws:

Prior to the passage of the Hospital Survey and Construction Act, on August 13, 1946, only eleven states had enforceable minimum standards for hospital maintenance and operation. Section 623 (d), Public Law 725 requires each state to enact legislation establishing minimum standards of maintenance and operation for hospitals receiving federal aid under the act. All states without a hospital licensing law at the time of the passage of the Hill-Burton Act subsequently enacted legislation establishing minimum standards of maintenance and operation for hospitals receiving federal aid. Of these state laws enacted since 1946, eleven apply only to hospitals constructed under the provisions of the Hill-Burton Act. The remaining states adopted comprehensive licensing laws covering all types of hospitals. These state hospital licensing laws, in most instances, have been drafted in general terms and authority has been given to the agency responsible for the administration of the law to make necessary rules and regulations. In general, the rules and regulations promulgated by the administrative agency have not been discriminatory nor have they acted to restrict the right of osteopathic physicians to use the facilities of tax-supported hospitals.

2. District Hospital Laws:

Several states authorize the formation of hospital districts and the establishment of district hospitals. The law providing for the establishment and operation of district hospitals is similar to county hospital laws which will be subsequently discussed. The provisions of the district hospital laws of some states upon analysis have been found to be discriminatory.

Provisions may be inserted in the district hospital law to insure for all qualified physicians and surgeons their right to use the facilities of tax-supported district hospitals. The most recent development of interest to the osteopathic profession in this direction was the passage of Assembly Bill 2362 at the 1949 session of the California legislature. This act, Chapter 919, Laws of 1949, approved July 15, 1949, provides for the administration and operation of district hospitals in a non-discriminatory manner. The act makes facilities of district hospitals equally available to doctors of medicine and doctors of osteopathy, as it provides in section 32128 that:

> No duly licensed physician and surgeon shall be excluded from staff membership solely because he be licensed by one or the other of the boards mentioned in section 2005 of the Business and Professions Code.

Section 2005, referred to above, defines "board" to include the Board of Medical Examiners and the Board of Osteopathic Examiners. Although there are separate examining boards in California, the physician and surgeon's license issued to both doctors of osteopathy and doctors of medicine by the respective boards is identical.

3. County Hospital Laws:

The county hospital laws enacted by the state legislatures authorize counties to establish, operate, and maintain county hospitals. These laws generally provide for a bond issue to be voted upon by the electorate whereby the issuance of bonds and the raising of the tax rate are approved. Such laws provide for the administration of the county hospital

by a board of trustees who are initially appointed and subsequently elected to office. This board is then responsible for the administration and operation of the hospital. It is a usually accepted rule of law that in the absence of any provision preventing discrimination or stating specifically who may and who may not practice in a hospital, the board of trustees of such institution may enact such rules and regulations governing the use of the hospital as they deem appropriate. In some states the following nondiscrimination clause has been written into the law with the intention of eliminating discrimination in the management of public hospitals:

Practitioners, no discrimination against—patient to have right to employ, etc.—In the management of such public hospital no discrimination shall be made against practitioners of any school of medicine recognized by the laws of Missouri, and all such legal practitioners shall have equal privileges in treating patients in said hospital. The patient shall have the absolute right to employ at his or her own expense his or her own physician, and when acting for any patient in such hospital, the physician employed by such patient shall have exclusive charge of the care and treatment of such patient, and nurses therein shall as to such patient be subject to the directions of such physician; subject always to such general rules and regulations as shall be established by the board of trustees under the provisions of this article.

However, since most of the laws governing the establishment and operation of county hospitals do not contain specific provisions to control the administration of such hospitals, some of the governing boards in cooperation with the medical staffs, composed of doctors of medicine, have adopted such rules and regulations as would permit recognition and acceptance by the Council on Medical Education and Hospitals of the American Medical Association and by the American College of Surgeons, thereby limiting the use of the facilities to doctors of medicine.

III. CONCLUSION

In the United States, the right of a patient to the services of the qualified physician of his choice should be recognized as a fundamental right. Efforts have been made to insure that no person is denied this right, but unfortunately, the rules and regulations controlling the operation and administration of most public hospitals have been discriminatory to the extent that patients of one group of qualified physicians and surgeons have been denied the services of their physician in such public hospitals solely because their physician possessed a degree of the healing art other than Doctor of Medicine. Public hospitals are established and operated with tax funds, paid by the people, including osteopathic physicians and surgeons and their patients, and should be available to these people on the same basis as they are to doctors of medicine and their patients. There is no provision in the federal law or regulations promulgated under the Hill-Burton Hospital Survey and Construction Act which would deny osteopathic patients the services of the physician of their choice in a hospital constructed or enlarged with the aid of federal funds. The laws of most states providing for the establishment and operation of public hospitals also permit osteopathic physicians and their patients to use public hospital facilities, but in too many instances the governing boards of hospitals in the exercise of their discretion and while under the influence of the allopathic school of medicine have adopted rules and regulations which require the exclusion of patients of osteopathic physicians and surgeons. This exclusion from tax-supported hospitals has generally resulted from the operation of the hospital standardization program promoted by the American Medical Association and the American College of Surgeons. Hospitals desiring to participate in this standardization program must exclude doctors of osteopathy to secure recognition as a "registered" or "approved" hospital. These rules and regulations have acted to bar a class of patients from exercising their right to use the facilities of public hospitals because they prefer the services of a qualified osteopathic physician and surgeon. Without question, reasonable rules and regulations must be promulgated to govern the use of public hospital facilities, but any rules which deny the facilities of a hospital to a qualified physician and his patients solely because of the physician's professional degree are without valid reason or justification. As patients of doctors of medicine do not wish to be limited in their choice of a physician to one doctor of medicine, patients of osteopathic physicians do not desire to be limited in their selection of a physician. Every citizen must guard his right and that of his neighbor to the unfettered choice of physician. Minority interests and rights as well as those of the majority are protected in a democracy, and each citizen should consider the preservation of the right of selection of his physician as one of his individual responsibilities.

MODEL LAW FOR HOSPITALIZATION OF THE MENTALLY ILL

Federal Security Administrator Oscar R. Ewing said on September 5 that he was sending to all State Governors copies of a suggested model law covering procedures for hospitalizing persons who are mentally ill. He said the draft law, designed to protect the rights and health of mentally ill patients, was prepared in the FSA on the recommendation of the National Advisory Mental Health Council. He paid tribute to the Council for their cooperation and expressed the belief that the new draft law would be of substantial assistance to State legislatures considering revision of existing laws in this field.

In a letter to the Governors, Mr. Ewing said, "The essence of the law, I believe, is in its assurance to persons who are mentally ill of: first, maximum opportunity for prompt medical care; second, protection against emotionally harmful or degrading treatment; and third, protection against wrongful confinement and deprivation of rights."

The high priority of interest accorded by the Governors to improving arrangements for the care of the mentally ill, including the specific problem of hospitalization procedures, was shown in both the 1949 and 1950 Governors' Conferences, Mr. Ewing said. He explained that the model law embodies the basic principles suggested in the report on mental health programs of the forty-eight States made to the 1950 Governors' Conference by the Council of State Governments. In addition to State officials, many lawyers, judges, psychiatrists and others concerned with the problems of caring for mentally ill patients have expressed a need for a model law for hospitalization procedures based on accepted concepts of sound legal and medical procedure, Mr. Ewing said.

The draft law was prepared under the direction of Dr. Robert H. Felix, Director of the National Institute of Mental Health, Public Health Service, and Alanson W. Willcox, General Counsel of the Federal Security Agency. The FSA staff worked in consultation with the National Advisory Mental Health Council, advisers on mental health problems to the Surgeon General; with a number of other non-Government legal and psychiatric authorities; and with Dr. Winfred Overholser, Superintendent of Saint Elizabeths Hospital, Federal Security Agency.

Mr. Ewing explained some of the main features of the new law:

"Although some States have hospitalization laws which are both medically and legally sound, State officials and other interested persons have recognized that there is often too little in the statutes by way of assistance or protection of the mentally ill.

"Like the pneumonia or tuberculosis patient, the person suffering from a psychiatric disease needs ready access to medical treatment. Yet days and even weeks of formalities must sometimes be undergone before a disturbed patient can gain admission to a mental hospital. Furthermore, under many existing laws, the mentally ill patient can be subjected to public airing of his case during 'trial' before a jury or in open court. He may be confined in jail while awaiting hospitalization, thereby delaying his recovery and adding to the anguish of his family. Some laws fail to recognize that detention does not have the same role in regard to the mentally ill as it does in respect to those who violate criminal laws. In mental illness, detention should be considered principally as an aid to treatment, although it is sometimes also necessary for the protection of the public.

"The model law provides for hospitalization through both voluntary and involuntary procedures; for post-admission examinations; release and discharge of improved or recovered patients, and protection of civil and personal rights.

"Although voluntary admission is considered preferable, there are many cases in which the individual refuses treatment or is incapable of making the decision to seek medical care. Under the model law, only a court order, issued after a hearing, can compel involuntary hospitalization for an indeterminate period. However, the law provides for admission on medical certification and for emergency admission, subject to prompt release upon request unless formal proceedings are instituted.

"When court procedures are involved, the law requires that these be carried out in a manner that will not be injurious to the proposed patient. Medical examinations ordered by the court must be 'held at a hospital or other medical facility, at the home of the proposed patient or at any other suitable place not likely to have a harmful effect on his health.' Court hearings must be 'conducted in as informal a manner as may be consistent with orderly procedure and in a physical setting not likely to have a harmful effect on the mental health of the proposed patient.' The presence of the proposed patient cannot be compelled, although he must be represented by counsel.

"Only in extreme emergencies may a patient be detained in jail while awaiting transportation to the hospital. In contrast to many existing laws which provide for transportation by law enforcement officers, under the model law, health authorities have primary responsibility for getting patients to the hospital.

"Once the patient is in the hospital, voluntarily or involuntarily, the law continues to safeguard his rights through its provisions for prompt medical and psychiatric examination, for judicial review of the hospitalization order upon request, and for conditional release or full discharge as soon as possible. Mechanical restraints may not be used unless 'required by the medical needs of the patient' and upon specific order of the superintendent of the hospital or his designee."

Copies of the model law may be obtained from the FSA Press Service or the National Institute of Mental Health, Public Health Service, Bethesda 14, Maryland.

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DOCTOR DRAFT

The Doctor Draft Law, Public Law 779, approved September 9, 1950, amends the Selective Service Act to expressly authorize special registration and special call of M.D.'s, dentists, veterinarians, pharmacists, optometrists, and D.O.'s, up to age 51.

All categories mentioned are eligible under other statutes for commission and use in their professional capacities. The legislative history of the doctor draft amendment clearly indicates that persons drafted thereunder will be offered commissions.

The amendment is aimed primarily at M.D.'s and dentists who received their professional training at federal government expense as ASTP's or V-12's but had little or no military service.

The amendment drafts no one unless he belongs to a category in respect to which the President orders a special registration and a special call, and then only if he is not deferred for "maintenance of the national health, safety, or interest."

Unless the President so acts, persons in a category mentioned in the amendment will be subject only to the general provisions of the Selective Service Act under which only persons 19 to 20 who are not deferred may be inducted.

Another provision of the amendment declares it is the sense of Congress that preosteopathic students be deferred annually in numbers at least equal to present levels. This will necessitate a revision of the preprofessional quota formula in Selective Service Local Board Memorandum #7, which deals with procedures for deferment of preprofessional and professional students of osteopathy.

MIDCENTURY WHITE HOUSE CONFERENCE ON CHILDREN AND YOUTH

President Truman has invited representatives of the American Osteopathic Association, American College of Osteopathic Surgeons, and the American Osteopathic Hospital Association to attend the Midcentury White House Conference on Children and Youth to be held in Washington December 3 to 7, 1950.

This is the fifth decennial White House Conference on children. The first in 1909 grew out of the crusading spirit of the era and related itself to the importance of preserving and strengthening home life for children. The second was concerned with crystalizing opinion and standards for legislative and administrative action. It formulated the first body of child health and welfare standards and accelerated the demand for Federal legislation in relation to the protection of maternity and infancy. The third White House Conference produced the most comprehensive study made until then of the needs of children, highlighted the standards of child care required, and provided new insights into juvenile delinquency. The 1940 conference highlighted the importance of the child in a democracy and concerned itself with how a democracy could best serve its children, and the corollary, how children could best be helped to grow into the kind of citizens who will know how to preserve and how to protect democracy.

The purpose of the 1950 Conference is to "consider how we can develop in children and youth the mental, emotional, and spiritual qualities essential to individual happiness and responsible citizenship, and what physical, economic, and social conditions are deemed necessary to this development."

The Conference will consider:

1. Facts established by the sciences that contribute to the knowledge of child growth and development

2. Programs and practices affecting children and youth in fields such as education, health, welfare, recreation, employment, and religion

3. Conditions, problems, and accomplishments relating to children and youth in the United States

4. Methods and plans for post-Conference follow-up work.

The American Osteopathic Association, American College of Osteopathic Surgeons, and the American Osteopathic Hospital Association accepted memberships, tendered by Federal Security Administrator Ewing, Chairman of the Conference, on the Advisory Council on Participation of National Organizations in the Conference. The Advisory Council met in Washington on May 25 and 26, 1950, and will meet again October 19 and 20, 1950.

SOCIAL SECURITY ACT AMENDMENTS OF 1950

The Social Security Act Amendments of 1950, Public Law 734, approved August 28, 1950, added to section 1101 of the Social Security Act a definition of the terms "physician," "medical care," and "hospitalization." These terms are defined to include osteopathic practitioners and the services of osteopathic practitioners and hospitals within the scope of their practice as defined by state law.

For purposes of legislative history, the report by the Senate Finance Committee (S. Report 1669, May 17, 1950)

states: "The effect of this definition is to leave the states free to utilize the services of the osteopathic profession and its institutions in like manner as they may use the services of doctors of medicine and medical hospitals without fear of being denied approval of their State plans for services under the various titles of the Social Security Act."

OTHER MAJOR PROVISIONS OF THE NEW LAW

Public Assistance.—Establishes a program of federal grants-in-aid for a fourth category of public assistance—aid to the needy permanently and totally disabled (Title XIV). The other three categories of public assistance are needy aged (Title I), needy dependent children (Title IV), and needy blind (Title X).

In connection with the four categories of public assistance, authorizes the states to make direct payments to doctors or others furnishing medical care or other remedial care as authorized under State law. Under the old law the federal government did not participate in the cost of medical care unless payment for such care was made to the recipient.

MCH and Services for Crippled Children.—Increases the authorization for federal grants for maternal and child health services (Part 1 of Title V) from $11 million per year in existing law to $16.5 million ($15 million in the present fiscal year).

Increases the authorization for federal grants for services for crippled children (Part 2 of Title V) from the $7½ million per year in existing law to $15 million ($12 million in the current fiscal year).

Old-Age and Survivors Insurance.—Extends compulsory coverage under old-age and survivors insurance (Title II) to about four and three-quarter million self-employed persons, but exempts osteopathic and certain other professions.

Contains the following provisions for voluntary coverage of employees of nonprofit organizations: 1. If the employer does not agree to pay his share of the contribution, the employees cannot be covered. 2. Even if the employer agrees to pay his share, none of the employees can be covered unless two thirds of them accept coverage. 3. If two thirds or more of the employees accept coverage, those employees who do so, plus any employees hired in the future, will be covered. 4. Coverage must be for an initial period of at least 8 years, and in addition 2 years' advance notice must be given before coverage can be terminated. Thus the minimum period of coverage is 10 years.

Effective date for the new coverage will be January 1, 1951.

The taxable wage base, i.e., the limit on total annual earnings on which benefits are computed and contributions paid, is increased from $3000 to $3600.

APPLICATION OF CIVIL DEFENSE PLANNING

The outcome of two world wars has been decided by the weight of American industrial production in support of a determined fighting force.

In any future war, it is probable than an enemy would attempt at the outset to destroy or cripple the production capacity of the United States and to carry direct attack against civilian communities to disrupt support of the war effort.

This assumption constitutes the basic reasoning behind the necessity for civil defense. An enemy could not attack all urban areas throughout the United States, but he could attack any community in the United States.

Attacks would be planned against points which would cause greatest strategic damage.

The probability that certain areas are more likely to be attacked than others does not reduce the responsibility of the communities less likely to be attacked to organize for civil defense. It does serve to indicate how they should organize.

The considerations which determine profitable targets are understood by potential enemies as well as our own planners. Such considerations include total population, density of population, concentration of important industries, location of communication and transportation centers, location of critical military facilities, and location of civil governments.

Weighing such considerations, the Federal Government has decided what areas in the United States are more likely to be attacked than others, not as a firm prediction but as a sound basis for nation-wide civil defense planning.

These areas are designated "critical target areas." They are being indicated to the Governors of all States for their guidance in the exercise of their civil-defense responsibilities. Accompanying this information will be appropriate advice on civil defense measures. Revisions may be necessary from time to time, and future federal assistance in planning and operational support will be provided.

No city or metropolitan area can be expected to provide completely for its own self-protection or recovery after attack. In fact, such provisions are unnecessary and are less practicable in actual operation than a properly organized system of intercommunity assistance (mutual aid) and state-directed support (mobile support) in which the existing resources of the state mobilize for the common protection.

In view of these considerations, the state-supervised plan for civil defense should aim to:

1. Organize critical target areas to meet emergency conditions anticipated under an atomic bomb attack. This type of organization would include all existing elements of local civil government and facilities, protective services not included in peacetime civil organization, and mutual aid.

2. Organize mobile support in the support areas, which are of equal importance to critical target areas.

The services should be organized on a basis of specialized units, with provision for a high degree of mobility. To be effective, these specialized units must have (1) ability to assemble rapidly, (2) provision for rapid transportation, (3) provision for effective means of communication, and (4) provision for operational self-sufficiency.

In order to achieve a balanced organization of the various services, the State civil-defense agency must supervise the organization and development of all such units in support areas.

Mobility of unit organization in the support areas will give the communities in which they are formed an effective means of self-protection in the event of direct enemy attack, and at the same time will provide emergency protection on a state-wide basis.

All communities should anticipate the possibility of some form of attack, as well as the possibility of their being called upon to receive evacuees from other areas.—United States Civil Defense, Issued by National Security Resources Board. U. S. Government Printing Office, Washington, 1950.

Current Medical Literature

INTERNAL DERANGEMENT OF THE TALOFIBULAR COMPONENT OF THE ANKLE

A mass of hyalinized connective tissue which has become impinged between the fibula and the talus may cause persistent pain and swelling over the fibular aspect of the ankle following an inversion sprain, according to Irving Wolin, M.D., and others, who advocate surgical removal of the extraneous tissue in *Surgery, Gynecology, and Obstetrics* for August, 1950.

If clinical symptoms continue after conservative treatment through immobilization, adhesive strapping, elastic support, shoe correction, and physical therapy, when ligamentous instability has not been demonstrated, Wolin and his associates explain the cause as a pinching of tissue mass within the talofibular articulation and have found at surgery a "mass of hyalinized connective tissue arising from the anteroinferior portion of the talofibular joint capsule and extending into the joint."

Nine cases are reported, three of which demonstrated pain and swelling due to "repeated pinching of an adventitious tissue mass between the lateral border of the talus and the articular surface of the fibula"; two represented an anomaly of the talofibular joint together with a bony ossicle, the former aspect causing the clinical symptoms; one illustrated "relative innocuousness of the ectopic island of ossification when it does not impinge within the joint," since the x-ray examination demonstrated a para-articular ossification in the tibial collateral ligament but the patient's complaints led the clinician to suspect a tissue mass in the fibular compartment of the joint, which was proved at surgery. In these six cases the symptoms disappeared completely and healing was satisfactory. The last three cases were recent; end results are not yet apparent.

Observations of these nine cases would seem to indicate that an inversion twist of the ankle involving the anterior talofibular and calcaneofibular ligaments so that there is hemorrhage into the joint causes a traumatic synovitis with synovial thickening and exudation, which usually are completely absorbed during the process of healing, but which occasionally may persist within the joint, hyalinizing, and molding according to the pressure of the articulating bones, and, if pinched repeatedly, causing recurrent and chronic pain and swelling.

A prophylactic measure advocated when a severe inversion sprain of the ankle has occurred is the use of cast immobilization for 6 weeks to assist the repair of the ruptured fibular collateral ligament. The time can be cut to 3 weeks, if the sprain has occurred without ligamentous rupture or avulsion. If there has been no sprain but the symptoms described are chronic, instability of the talus and osteochondritis should be ruled out. Conservative measures are often successful. If the condition persists, Wolin and his associates "place a slightly curved vertical incision with anterior convexity, 1½ inch in length, just anterior to the distal end of the fibula. The anterior talofibular ligament and the synovial lining are incised in the same line. The inferior aspect of the talofibular articulation is exposed by a retractor placed deeply just below the tip of the fibula. If the ankle is then alternately inverted and everted, the tissue which is interposed between the fibula and talus is readily demonstrable."

TREATMENT OF MULTIPLE SCLEROSIS

In his review of drug therapy in the *Journal of the American Medical Association*, August 5, 1950, George A. Schumacher, M.D., states that the outlook for any cure of multiple sclerosis is not hopeful and the outlook for symptomatic relief is not so good as recent numerous claims might lead one to believe. Effects have been called favorable although unsubstantiated with precise scientific data or documentary statistics. The etiology and pathogenesis of the disease are still being disputed. No acceptable rationale for therapy can yet be propounded.

Schumacher quotes Putnam's statement on the main goals of therapy as the avoidance of injuries and infections, the avoidance of pregnancy, a change to a warmer climate, an attempt to modify the allergic state, the prevention of occurrence of thromboses, improvement of blood supply and nutrition to the lesions already formed, rehabilitation of the patient by re-education and exercise, and the use of drugs for symptomatic aid, especially drugs which help to overcome muscle spasm, those which diminish pain, and those which promote bladder function. Apparently, drug therapy, although usually categorized as (1) those drugs which are intended to prevent the development of lesions in the nervous system, and (2) those drugs which modify the resulting dysfunctions, is aimed also to accomplish several of these goals of therapy described by Putnam. Schumacher says, "It is to be emphasized that no category of therapeutic agents has been reported or even suggested as capable of healing the primary lesion of multiple sclerosis itself, whether acute and potentially reversible or chronic and presumably irreversible."

Claims by Horton and his associates for improvement through the use of histamine were based on a theory of pathogenesis attributing the disease to vascular disorder of the nervous system with secondary changes in nervous and interstitial tissues. Histamine was used as a vasodilator rather than a desensitizer. Criteria for improvement were implied in a general fashion. Recently histamine has been administered to better advantage through iontophoresis. Reports sound optimistic but actually contain no defined and adequate criteria, no use of controls, and only patients' generalized estimates of improvement. Other vasodilators which have been used with varying success have been papaverine and amyl nitrite. Franklin and Brickner in 1947 postulated that the central nervous system lesions are caused by vasospasms and reduced blood supply, a theory which is supported clinically by the fluctuations and reversibility of the symptoms. The results of therapy with vasodilators in several combinations have not been satisfactory. Sympatholytic and adrenolytic compounds, such as tetraethylammonium chloride and benzazoline hydrochloride, have not been reported to produce lasting benefits. Sympathectomy has not shown positive results. The justification of the use of vasodilators is still on a purely theoretical basis.

An abnormal clotting mechanism with associated venular thrombosis has been postulated as the pathogenesis of the plaques in the lesions in multiple sclerosis. Anticoagulants therefore have been used, but with inconclusive results. Schumacher says support for the theory is indirect. Local predisposing factors in the vein walls which initiate intravenous clotting have not been demonstrated. Other workers believe that the occasional presence of venular thrombosis means only that it is an effect of the primary lesion rather than a cause of it.

Another possible source of the central nervous system lesions proposed is "vasoparalytic vascular phenomena which lead to stasis and thrombosis of small cerebral veins and capillaries," based solely on evidence in microscopic histologic sections. Therapy based on this concept, designed to elevate blood pressure and stimulate circulation to counteract vasoparalytic phenomena, consisted of ephedrine, caffeine, alcohol, and adrenocortical substances. The recommendation of this therapy was enthusiastic, but primary effects were not measured, criteria of benefits were not given, nor were any statistics included in the report.

Vitamins have been used to treat patients with multiple sclerosis since as early as 1931. Thiamine hydrochloride, nicotinic acid, the combination of the two, vitamin E, and most recently vitamin B_{12} have been utilized. Putnam's statement seems most pertinent, in the face of subjective improvement but no important changes in objective neurologic signs.

He says, "It is well known that recovery from traumatic lesions of the cord are dependent on a good general state of nutrition and absence of infection. This is also true of other lesions of the nervous system. The most sensitive tissue of the body, which responds to minute physical and chemical stimuli and can function only within a small range of oxygen supply, available glucose and specific enzyme systems, is also dependent on approximately normal nutrition for growth and repair."

Schumacher reviews the use of drugs aimed at modifying allergic states, the most important of which is histamine. Contemporary judgment seems to be that the premises for desensitizing "allergic" lesions are false; in any case, reports of the effects of diphenhydramine, tripelennamine, and antazoline hydrochloride have no statistical validity.

The use of such miscellaneous agents as cytochrome C, trypan red, or vaccines has not been promising.

Among the drugs used for symptomatic relief have been quinine, neostigmine, curare, and mephenesin. Quinine is no longer considered effective against spasticity. The use of neostigmine was advocated on the theory that muscle hypertonus and proprioceptive reflex hyperirritability can be considered release phenomena resulting from the removal of inhibition for the anterior horn cells due to synaptic disorganization. Reported benefits from neostigmine and intensive muscle re-education are relaxation of spasticity, facilitation of voluntary innervation, decrease in intention tremor, improved coordination, decreased fatigability, and improvement in control of urination. Neurologic signs were unaffected and remissions were not produced. Kabat, who treated 29 patients with 2 to 3 mg. of neostigmine parenterally and 15 to 30 mg. orally three times a day as well as with physical therapy, stated that the aforementioned improvement was noticeable in most patients after a few months but that many months and even years would be necessary for rehabilitation. In general, however, other investigators think the favorable results are caused by intensive muscle reeducation and not the drug. Subsequent carefully controlled experiments have ruled out the probability that neostigmine in spastic states was responsible for the beneficial results reported by Kabat.

Curare is said to provide a partial block of motor impulses at the myoneural junction, which relaxes muscles without affecting the voluntary ability to contract. The amount of curare needed to produce this state may result in respiratory or deglutitory paralysis. Before curare can be used, the mode of action at the myoneural junction must be clarified, the effects on the central and peripheral nervous systems must be elucidated, the relationship of curare to the anticholinesterases must be determined, and a method should be devised to assay blood levels.

Mephenesin is claimed to affect cerebral, brain stem, and cord mechanisms. Oral administration is useless, but a rapid intravenous injection maintaining high levels could sustain a reaction for a transient and brief period. Mephesin is useful, according to Schlesinger, only intravenously to judge the degree of contracture and to relax muscles over a brief period to facilitate pelvic examinations and operations.

Although various agents have been tried with contradictory reports to improve bladder control, to counteract the formation of bladder stones, to control spasmodic laughter and weeping, to improve disorders in gait, and to affect different miscellaneous symptoms, Schumacher concludes that it would appear dubious that drugs can materially affect bladder dysfunction caused by lesions of the central nervous system or the changes in mood attributable to multiple sclerosis.

SEVERE, SPORADIC VIRUS PNEUMONIAS

Differential diagnostic problems and problems of therapy, based on a study of seven patients in a 3-year period are discussed by Hobart A. Reimann, M.D., in the *Journal of the American Medical Association*, September 9, 1950. Reimann points out: "While all 7 cases have enough features in common to suggest a nosographic entity, different circumstances in each gave rise to different diagnostic problems."

These common features included mild onset, mainly constitutional symptoms, duration of symptoms from 10 to 32 days, cough, headache, profuse sweating, delayed signs of pneumonia, conjunctival and pharyngeal injection, and increased sedimentation rate.

Features present in some but not all patients were prevalent mononuclear cells in the pharyngeal exudate, bradycardia, cold agglutination, and normal leukocyte count early in the course of the disease.

These symptoms are indicative not only of virus pneumonia but also of psittacosis, Q fever, influenza, occasionally atypical pneumococcic pneumonia, and of the early stages of typhoid, tuberculosis, and coccidioidomycosis, all of them diagnoses which were considered possibilities among the 7 patients observed. Other conditions resembling virus pneumonia are histoplasmosis, erythema multiforme exudativum, infectious mononucleosis, Löffler's disease, tularemic and rheumatic pneumonia, each of which can be differentiated as the disease progresses and the characteristic features develop. Tests assist the diagnosis, and epidemiological data contribute. Reimann says, "Perhaps in the cases reported herein undue stress was placed on the consideration of uncommon diseases in differential diagnosis, yet severe sporadic virus pneumonia is not a common disease either and often mimics the entities listed." Too often exclusion is the means by which virus pneumonia is diagnosed.

Among the problems posed in therapy are the necessity for and the infrequency of prompt diagnosis so that adequate therapy can be instituted during the early phase of the disease; the advisability of supplementing therapy with penicillin or sulfadiazine if coccic pneumonia is combined with the virus type, therapy to be discontinued if good effects have not been obtained after 48 to 72 hours; and the necessity to differentiate so that specific treatment by the proper antibiotic can be used.

CONGENITAL METATARSUS VARUS

A "third of a club foot" is the way J. Hiram Kite, M.D., describes congenital metatarsus varus in a recent article in *The Journal of Bone and Joint Surgery*, July, 1950. After studying 300 cases, Kite reports that this deformity has been occurring with increasing frequency during the last few years. Frequently overlooked at birth, the adduction and inversion deformity of the fore part of the foot becomes more pronounced during the first few months of life, with little tendency toward spontaneous recovery.

Kite divides congenital metatarsus varus into two groups: the more severe cases showing a strong hereditary tendency and associated congenital deformities, and the less severe cases showing no hereditary tendency or allied deformities. The size of the first group is relatively small and more or less constant. The deformity is marked by a fixed valgus of the heel and operative treatment is required in most cases. There is usually some recurrence of the deformity after correction and sometimes a second operation is necessary. The deformity of this more severely affected group is usually designated by the term "metatarsus adductus." The second group, with the condition called "metatarsus varus," is much larger. In these cases there is no fixed valgus of the heel and the deformity yields readily to treatment. After treatment there is little tendency to recur. All of the cases studied belong to this latter group.

Adduction and inversion of the fore part of the foot is the most characteristic finding in cases of metatarsus varus. The arch is higher than normal and the more advanced cases have a prominence on the lateral border of the foot. The heel is nearly in the mid-line, making it almost impossible to tell whether the heel is in a varus or valgus position. It is not in a fixed valgus position, however. Roentgenographic studies have revealed varying degrees of adduction of the fore part of the foot and usually valgus deformity of the heel. Pathologically, metatarsus varus is marked by congenital muscle imbalance. Although most congenital deformities are fully developed at birth, in only 94 of the 300 cases studied

was metatarsus varus recognized at birth. The average age at which the deformity was recognized in the remaining cases was 2.8 months. Like the deformities following poliomyelitis, the deformity increases with the lapse of time.

Kite lists six criteria necessary to establish the diagnosis of metatarsus varus. Functionally, the foot is always pulled in and up by the anterior tibial muscle. Structurally, there is adduction and inversion of the fore part of the foot, a higher longitudinal arch than normal, a prominence on the lateral border of the foot, greater rigidity of the foot, and, finally, an inability to abduct the foot past the mid-line. Other metatarsus varus-like deformities should not be confused with congenital metatarsus varus. Among these are recurrent club foot, spina bifida, arthrogryposis multiplex congenita, Friedreich's ataxia, and metatarsus adductus. The etiology of metatarsus varus is unknown.

Treatment varies with the severity of the deformity. Of the 300 cases studied, 77 cases were so mild that casts were not needed for correction. Mothers were instructed to stretch the feet of infants and to provide children old enough for hard soles with "swung-out" shoes. The remaining cases were treated with casts and wedgings similar to those used for the correction of adduction of the fore part of the clubfoot, with special care being taken not to turn the heel into a valgus position. Under this treatment new casts are usually applied each week until the baby is 3 months old. After that the fore part of the foot may be wedged in abduction. In the average case the adduction is corrected in about 4 weeks, and the foot is then held in a slightly overcorrected position for 3 or 4 weeks longer. Thereafter, normal shoes are worn.

PNEUMOPERITONEUM VERSUS PNEUMOTHORAX

"Pneumoperitoneum as a definitive procedure alone or, when necessary, in association with phrenicotripsy and antibacterial therapy is a method of great value in the treatment of pulmonary tuberculosis of any stage of development," say James S. Edlin, M.D., and Sydney Bassin, M.D., in the *New York State Journal of Medicine*, August 15, 1950, a conclusion based on the results of treatment in 392 cases, which they plan to follow over the years in order to present long-term studies.

In listing the advantages pneumoperitoneum carries over pneumothorax, they mention that it can be induced in almost every patient, while pneumothorax is often impossible to initiate because of symphysis of the pleura. Pneumoperitoneum can be reinduced easily, as pneumothorax cannot. Edlin and Bassin say, too, that the procedure is reversible with no adverse effects on the lung or pleura. Complications are not serious and occur infrequently. Pneumoperitoneum can be applied no matter how far advanced the disease is, and almost all patients can take a trial course without harm; in patients far advanced in the disease, pneumothorax, especially bilateral, cannot be attempted without the probability of dangerous results. The status of the disease process is easily evaluated by x-ray at any time during pneumoperitoneum, which is not true of the collapsed lung of pneumothorax. In endobronchial disease pneumoperitoneum improves bronchial drainage and, together with antibacterial therapy, provides a superior approach to the control of the disease process. Pneumothorax in this condition is definitely contraindicated. Whatever the position of the cavity in the lung field, pneumoperitoneum relaxes the tissues and decreases pulmonary volume over the entire lung, unless there is marked thickening of the pleura, extensive pulmonary fibrosis, or bullous emphysema, conditions which also prohibit pneumothorax. Extreme apical cavitation, which is usually adherent, and basal cavitation, both often unresponsive to pneumothorax, can be treated with favorable results by pneumoperitoneum.

As Edlin and Bassin put it, "Many a patient completes a successful course of pneumothorax therapy with a thickened pleura, a contracted lung, a retracted mediastinum, or all three. He has arrested his disease process, but he has become a pulmonary invalid with lowered pulmonary function greater than that produced by the disease alone." The satisfactory treatment is simple to apply, reversible, with a wide range of applicability, and minimal complications and hazards. They believe pneumoperitoneum is the one method of mechanical therapy encompassing these criteria. They say, "It is important to realize that pneumoperitoneum achieves its effect by relaxation of the normal intrapleural pull without affecting the intrapleural space itself in any permanent manner. The maintenance of the integrity of the intrapleural space is of paramount importance in the preservation of pulmonary function during and at the end of therapy."

INTESTINAL LAVAGE IN THE POTASSIUM INTOXICATION OF LOWER NEPHRON NEPHROSIS

Patients with acute temporary renal insufficiency characterized by lower nephron nephrosis are often drowned due to overenthusiastic therapy or die a cardiac death.

M. H. Hicks, M.D., and others report a study of upper intestinal lavage as a means of clearing the blood of products of metabolism, generally excreted by the kidney, as demonstrated in three cases, in the *American Journal of Medicine*, July, 1950.

A double lumen Miller-Abbott tube is passed through one nostril to from 2 to 5 feet beyond the pylorus and a Levine gastric-suction tube is passed through the other nostril until the tip enters the stomach. The following solution is then introduced through the Levine tube at a rate of as near 10 liters of gram solution per 24 hours as possible:

Sodium chloride	6.0 gm./L.
Sodium bicarbonate	3.0 gm./L.
Calcium chloride	0.1 gm./L.
Magnesium chloride	0.1 gm./L.
Glucose	20.0 gm./L.

Wangensteen-type suction is applied to the evacuation lumen of the Miller-Abbott tube.

Most of the lavage fluid is returned. In one case treated for four days 26.5 liters were recovered of a total of 28 liters employed. As much as 49.5 gm. of urea have been removed in 24 hours. It is estimated that, with the patient at basal conditions and adequate glucose intake, the removal of 1 to 3 gm. of urea every 24 hours will afford a balance. As much as 4.1 gm. of potassium was removed in 24 hours, thus reversing severe cardiac manifestations of hyperpotassemia in one case. Hyperpotassemia is considered the greatest threat to individuals with acute renal insufficiency and frequent electrocardiograms and determinations of blood potassium levels should be made.

This method is judged to be one of the simplest and safest means for reducing end-products of metabolism generally excreted by the kidney in cases of temporary acute renal shut-down and is most effective.

MORTON TERRY, B.A., D.O., M.Sc. (Ost.)

CONGENITAL ANORECTAL STRICTURE

Samuel S. Brown, M.D., and Austin H. Schoen, M.D., report in the *Journal of Pediatrics* for June, 1950, the examination for congenital anorectal stricture of 100 consecutive infants in a well-baby clinic. On digital palpation, 39 per cent were found to have such lesions, yet less than one-quarter of these had any suggestive history. All the lesions except one disappeared spontaneously between 3 and 6 months of age.

The authors recommend not treating children with anorectal stricture unless their symptoms demand it. The typical history is one of a child straining at stool, turning red or blue in the face, crying, and passing a soft or ribbon-like stool. Rectal examination reveals a resistance to the finger about 2 or 3 centimeters from the anus. Cases needing therapy are treated successfully with a single-stage dilatation using a liquid topical analgesia on flexible rubber dilators. Digital dilatation is decried.

ARNOLD MELNICK, A.B., M.A., D.O.

EXTENSIVE LABORATORY STUDIES OF A PATIENT WITH PHEOCHROMOCYTOMA BEFORE AND AFTER SUCCESSFUL OPERATION

Pheochromocytomas which are tumors resulting from abnormal proliferation of the mature, secreting cells of the endocrine portion of the adrenal medulla are discussed by Robert W. Wilkins, M.D., and others in the *Archives of Internal Medicine,* July, 1950. Hypertension, thyrotoxicosis, or diabetes mellitus are often misdiagnosed when this condition exists.

The characteristic symptoms resemble experimental epinephrine intoxication—attacks of headache, palpitation, sweating, pallor, coldness of the extremities, and nausea and vomiting, associated with paroxysmal hypertension.

A case is reported which was studied in great detail before, during, and after surgical treatment. Diagnostic aids such as those precipitating hypertensive attacks (histamine, insulin, tetraethylammonium bromide, and methacholine chloride) and those which cause hypotensive effects (piperidylmethyl benzodioxane-933F, dihydroergokryptine-DHK135, and dibenamine hydrochloride) are discussed. Benzodioxane which has recently received the greatest publicity is reported by the authors to have failed to prove itself uniformly reliable or safe.

MORTON TERRY, B.A., D.O., M.Sc. (Ost.)

TOXICITY OF CARINAMIDE

William P. Boger, M.D., and J. William Crosson, M.D., have performed extensive study of carinamide which, by suppressing renal excretion of penicillin, elevates the plasma concentrations of the latter from two to seven times. They report on 1,997 cases in the *American Journal of Medicine,* July, 1950.

Nausea (12.1 per cent) and vomiting (5.5 per cent) were encountered most frequently but it is felt that this may be due in large measure to the mechanical factor of swallowing large numbers of tablets frequently. Other toxic symptoms had an incidence of less than 2 per cent. There is no evidence that carinamide interferes with nitrogen elimination nor that it permanently damages renal function.

Since carinamide is wholly excreted by glomerular filtration, dosage must be individualized in cases of renal pathology. The drug may cause positive tests with Benedict's and Fehling's solutions though no glucose is present in the urine. Average dosage is 1.5 to 4.0 gm. every 3 to 4 hours (the tablets are 0.5 gm. and quite large).

MORTON TERRY, B.A., D.O., M.Sc. (Ost.)

EFFECTS OF PITUITARY ADRENOCORTICOTROPHIC HORMONE (ACTH) IN PANHYPOPITUITARISM OF LONG-STANDING AND IN MYXEDEMA

After detailed investigation, laboratory and clinical, Abbie I. Knowlton, M.D., and others report their conclusions regarding ACTH in the treatment of long-standing hypopituitarism and primary myxedema in the *American Journal of Medicine,* March, 1950.

In the former condition with presumed atrophy of the adrenal glands 10 days of ACTH administration resulted in sodium and chloride retention, increase in 17-ketosteroid and uric acid excretion, and an unexplained rise in basal metabolism. No alteration in carbohydrate or nitrogen metabolism was noted. Mild but consistent hypertension appeared in both studies.

The conclusion is that ACTH had only minimal effects on the patient with long-standing hypopituitarism and that no indications of increased thyroid activity could be demonstrated in the patient with myxedema.

MORTON TERRY, B.A., D.O.

EFFECT OF FEEDING EGG YOLK AND CHOLESTEROL ON SERUM CHOLESTEROL LEVELS

Experiments were conducted in which 24 subjects were fed varying amounts of egg yolk powder in addition to their regular dietary and 5 subjects were fed cholesterol in a variety of forms. William J. Messinger, M.D., and others report their findings in the *Archives of Internal Medicine,* August, 1950.

They conclude that there is an unidentified substance in egg yolk which elevates the cholesterol level of human serum even more effectively than the ingestion of pure cholesterol. The amount necessary to produce this result, however, is well above that in the amount of egg yolk consumed in the ordinary diet.

MORTON TERRY, B.A., D.O., M.Sc. (Ost.)

A STUDY OF KHELLIN (VISAMMIN)

Theodore Greiner, M.D., and others from the Department of Pharmacology of Cornell University Medical College report on a study of khellin (Visammin) in the *American Journal of Medicine,* August, 1950.

The drug had been reported as highly effective (90 per cent of 250 patients) in abolishing the pain or reducing the frequency and severity of attacks of angina of effort or decubitus. Thirty-nine patients with this complaint were selected and were given varying doses of the drug or a placebo. A daily report card was issued on which the patient recorded his progress.

The results showed that khellin had no greater effect than the lactose placebo tablet in the control of pain of the angina of effort. There was no effect on blood pressure.

MORTON TERRY, B.A., D.O., M.Sc. (Ost.)

PARA-AMINOBENZOIC ACID IN THE TREATMENT OF RHEUMATIC FEVER

Robert J. Hoagland, M.D., reports on the use of paba with salicylates in rheumatic fever in the *American Journal of Medicine,* August, 1950. He concludes that simultaneous administration of paba with salicylates increases the blood level of the latter and thus produces optimum results in the treatment of rheumatic fever. Too, the paba per se has a beneficial effect on the disease process and disappearance of symptoms and fever has been demonstrated.

MORTON TERRY, B.A., D.O., M.Sc. (Ost.)

THE THIMBLE ELECTRODE

A new device for consistently rapid motor point localization to enable immediate initiation of resuscitation is described by L. C. Sarnoff and S. J. Sarnoff, M.D., in the July, 1950, issue of the *Archives of Physical Medicine.*

The stimulating electrode is incorporated into a long flexible vinylite thimble which fits the index finger snugly. A lead wire 12 inches long, equipped with an attachment to the source of current, is sealed into the lateral edge of the thimble. When the phrenic motor point is being localized and the diaphragm contracted, the electrophrenic respirator is situated on the side opposite the nerve being stimulated, so that voltage regulation and the exploration can be performed simultaneously. In the meantime, a large standard dispersive electrode is placed on some convenient skin area.

The average exploration time for 24 subjects was 7.3 seconds. The writers report that in 87 per cent of these patients the motor point was stimulated in 10 seconds or less, the maximum and minimum time range being 45 seconds and 2 seconds.

Book Notices

ACADEMY OF APPLIED OSTEOPATHY YEARBOOK 1950. Lithographed, paper bound. Pp. 135, with illustrations. Published by the Academy of Applied Osteopathy. Cushing-Malloy, Inc., Ann Arbor, Mich., 1950.

Recently the 1950 Yearbook was distributed to members of the Academy of Applied Osteopathy. In the foreword, Leon E. Page, D.O., chairman of the Editorial Committee, states that all who are interested in perpetuating the therapeutic ideals of A. T. Still are invited to peruse the pages of the Yearbook and to contribute to future editions. The Yearbook is rapidly becoming an important medium of expression for those who wish to perpetuate the principles which have made the continued development of osteopathy possible.

The 1950 Yearbook is dedicated to Louisa Burns, the dean of osteopathic research workers. The lead article by Mary Alice Hoover brings to Dr. Burns the credit which is due her. It is followed by a talk given before the Academy of Applied Osteopathy on July 16, 1949, by Dr. Burns.

The second portion of the Yearbook includes articles on osteopathic principles by Allan A. Eggleston, Leon E. Page, Alan R. Becker, M. D. Young, Paul E. Kimberly, H. V. Hoover, Beryl E. Arbuckle, and Paul K. Theobald. The third portion includes Academy lectures by Thomas L. Northup, H. V. Hoover, Harry L. Davis, Angus G. Cathie, and Ernest Sisson, which are followed in turn by reprinted articles from the JOURNAL OF THE AMERICAN OSTEOPATHIC ASSOCIATION by H. H. Fryette and C. Gorham Beckwith, articles on osteopathic research, and three prize essays by osteopathic students. The volume is concluded by a list of members of the Academy of Applied Osteopathy.

The Yearbook is recommended reading for all of the profession.

E. H. MCKENNA, D.O.

VISION, Its Development in Infant and Child. By Arnold Gesell, M.D., Frances L. Ilg, M.D., and Glenna E. Bullis. Cloth. Pp. 330, with illustrations. Price $6.50. Paul B. Hoeber, Inc., 49 E. 33rd St., New York City, 1949.

Like all of Gesell's other books, this new volume offers minute and careful observation, logic-bound thinking with wisely drawn conclusions, and a background of knowledge and experimentation in the field equal to none. But it also carries the faults of previous writings—philosophical dialectics in excess (including some semantics) and a style of writing that is hardly conducive to understandable reading.

This newest in the series of presentations on developmental psychology includes a recounting of much material found in previous expositions, with some added research, and with the accent, of course, on the visual patterns. Painstaking descriptions of the growth and development of vision at various ages are given, and a phylogenetic background is provided. A developmental hygiene of vision is also offered to the reader. There is much to be learned from this dissertation. The detail is such, however, that it is recommended in its entirety for only those specifically interested in developmental optics. Like most Gessell textbooks, it is not suitable for lay reading.

The chapter on Maldevelopment and Child Vision is clinically applicable material, and the discussion of a case of complete blindness in a mentally normal child establishes, as Gesell says, "a zero mark as a point of reference for the interpretation of the ontogenetic cycle of visual development." This section is a must for anyone who deals with children or with eyes.

Most interesting is the fact that Gesell drew fully from the field of optometry, using freely its technics and listing two optometrists as co-authors. He also placed great credence in a number of valuable psychovisual tests (especially those of Betts), heretofore not generally accepted by the medical profession, and includes them in his testing procedures.

The average physician will find this book neither interesting nor of direct value unless he has some particular interest in the subjects treated—vision and its development in infants and children.

ARNOLD MELNICK, A.B., M.A., D.O.

MEDICAL DIAGNOSIS. Edited by Roscoe L. Pullen, M.D., F.A.C.P., Professor of Graduate Medicine, Director of the Division of Graduate Medicine, and Vice Dean of the School of Medicine, Tulane University of Louisiana; Senior Visiting Physician, Charity Hospital of Louisiana at New Orleans; Consultant in Medicine, Veterans Administration Hospital, New Orleans, Louisiana; Consultant to the Surgeon General, Department of the Army, Washington, D. C. Ed. 2. Cloth. Pp. 1119, with illustrations. Price $12.50. W. B. Saunders Company, West Washington Square, Philadelphia, 1950.

In its attempt to correlate bedside observations with the interpretation of accessory diagnostic technics, such as roentgenography and laboratory diagnosis, the general theme of this book, the application of physical diagnosis, adequately seems to dominate the contributions in the second edition. The JOURNAL review of the first edition in 1944 stated, "Its object is to go far beyond the usual text on diagnosis and to explain and to epitomize the complete examination of a sick person. . . . The book is full of good material, which in succeeding editions probably will be better balanced."

The second edition has undergone careful revision measured against a criterion of usefulness in clinical practice. Regional presentation of the principles of diagnosis has proved satisfactory in the first edition and so is retained. Signs and symptoms elicited through inspection, palpation, percussion, and auscultation receive the principal emphasis.

Important new chapters have been added.

Thomas and Finch, accepting the blood as an organ, have contributed a chapter which they introduce by saying, "Laboratory tests should not be minimized, but the symptoms and signs, though often widespread and protean in character, should be of even greater importance and value to the clinician. The problem is difficult for one cannot say 'these are the physical findings of blood disease' since the blood is distributed throughout the body, and its abnormalities may be reflected in disturbed function of nearly every tissue of the body. For this reason a discussion of the bedside diagnosis of hematological disease is almost a postgraduate course in physical diagnosis." This addition is pertinent, interesting, and well written.

Another new contribution is that of Boas on "The Aged" in which he deplores the fatalistic attitude held both by families and most physicians which so often results in slipshod diagnosis, when an exhaustive diagnostic approach is the only means of supplying adequate therapy. The whole person, his bodily function and emotional state, is the focus of proper diagnosis.

Likewise, physical examination of the whole person is described in detail by Thorner in "The Psychiatric Patient," the third new chapter.

Pullen's contributions consist of "The Medical History," and "Introduction to Examination of the Patient." Herein he adopts criteria for complete diagnosis advocated by the New York Heart Association, which can be extended to and modified for all body systems. The component parts of this complete diagnostic procedure are determining the etiology of the condition, the anatomic alterations of the disorder, the physiologic disturbances resulting therefrom, the functional capacity of the patient to carry on, and the course of the disease or response to therapy. There is evidence, too, that

he received excellent cooperation among his colleagues who assisted in compiling the volume and revising their contributions in accordance with his concept of medical diagnosis.

A TEXTBOOK OF GYNECOLOGY. By Arthur Hale Curtis, M.D., Emeritus Professor and Chairman of the Department of Obstetrics and Gynecology, Northwestern University Medical School; Formerly Chief of Gynecological Service, Passavant Memorial Hospital, Chicago; and John William Huffman, M.D., Associate Professor of Obstetrics and Gynecology, Northwestern University Medical School; Attending Gynecologist, Passavant Memorial Hospital, Chicago. Ed. 6. Cloth. Pp. 799, with illustrations. Price $10.00. W. B. Saunders Company, West Washington Square, Philadelphia, 1950.

A new name has been added to the cover of "A Textbook of Gynecology," but otherwise few changes appear to have been made in the book since publication of the fifth edition in 1946. This is understandable, however, since the fifth edition was a major revision. At that time changes were made in practically every chapter. New material was added, particularly in the field of ovarian tumors and tumors of the uterus, and the chapter on endocrinopathic disturbances was carefully rewritten. Numerous new photographs and microphotographs were included.

But 4 years is not too soon to review and re-evaluate even a major revision; hence work was begun on the sixth edition. Curtis, no longer an active participant in university duties, thought it appropriate to "share the responsibility of preparation of this edition with one more intimately in touch with academic activities in gynecology." John William Huffman, M.D., was a logical choice for coeditor as he had worked under Curtis on the staffs of both Northwestern University Medical School and Passavant Memorial Hospital, Chicago. He also organized the photographs and microphotographs for the fourth edition of the textbook. This new edition is the product of their joint efforts.

The sixth edition follows very closely the physical arrangement and even the wording of its predecessor. The basic divisions of material remain the same. The book is divided into twelve sections covering anatomy, physiology (exclusive of the endocrine glands), the endocrines, history and examination, infectious processes, tumors of the uterus, displacements and relaxations, and disturbances of function. There are some significant improvements in the material, however. The chapter covering embryology of the generative organs has been extensively revised, and the two chapters, "Urethral Caruncle" and "Prolapse of the Urethral Mucosa," which appeared independently in the fifth edition, have been included in the greatly enlarged chapter on urinary tract problems. Finally, new material on sarcomatous growth of the cervical stroma and on the paraurethral ducts and mesonephric remnants in the cervix has been added. Eleven new black and white illustrations and one new color plate complete the improvements. Again Tom Jones is to be congratulated on his excellent original art work.

To those who are already familiar with Curtis' textbook, it is unnecessary to say that it is one of the outstanding works in the field. Students and clinicians alike have come to rely on it. For those who have not used it this book is recommended without reservations.

A PRIMER FOR DIABETIC PATIENTS. By Russell M. Wilder, M.D., Ph.D., F.A.C.P., Professor and Chief of the Department of Medicine of the Mayo Foundation, University of Minnesota; Senior Consultant in the Division of Medicine, Mayo Clinic. New, 9th Edition. Cloth. Pp. 200, with illustrations. Price $2.25. W. B. Saunders Company, West Washington Square, Philadelphia, 1950.

The Primer is a valuable little book which physicians may wish to recommend to their diabetic patients. As Wilder states, "The diabetic patient should be fully instructed in the management of his disease. Without a thorough schooling in the testing of his urine, the use of insulin and the selection of his food, his well-being is endangered."

This book, now in its ninth edition, goes into the subject of diabetes thoroughly in simple, easy to understand language. The author begins with a general discussion of the disease, its causes and treatment. He describes the various tests of urine for sugar and diacetic acid and tells how to prepare and administer insulin. He devotes two chapters to listing the complications of diabetes and to telling how to avoid them. He also offers complete dietary information including sample menus, recipes, food substitutes, and directions for the proper preparation of food. In the final chapter Wilder tells how to select and weigh food. At the end of the book are various directions and charts for use by the physician in planning diet prescriptions.

Wilder is careful to stress that this book should not be used without a physician's supervision.

The last edition of this book was published in 1946. Since then the author and his staff have taken a more liberal view regarding dietary recommendations for patients using insulin. Consequently, this edition tends to advise somewhat less rigidity than formerly in control of glycosuria. The objectives of treatment—a healthy, happy patient—remain the same, however.

THE PATHOLOGY OF ARTICULAR AND SPINAL DISEASES. By Douglas H. Collins, O.B.E., M.D. (Liverp.), Reader in Clinical Pathology in the University of Leeds. Formerly: Rheumatism Research Fellow in the University of Leeds; E.M.S. Pathologist and Medical Superintendent, Wharncliffe Hospital, Scheffield; Junior Lecturer and Holt Fellow in Pathology in the University of Liverpool. Cloth. Pp. 332, with illustrations. Price $7.00. The Williams & Wilkins Company, Mt. Royal & Guilford Aves., Baltimore, 1950.

While it is true, as Collins states in this new specialized treatment of disturbances of the skeletal system, that the knowledge of most practitioners who deal with their diagnosis and treatment comes from what is revealed in the x-ray film, he also points out that radiology ". . . is only the shadow without the substance of morbid anatomy." Anatomical dissections and microscopical preparations are also important sources of information. These form the greater portion of the illustrations, which are original work, beautifully organized, prepared, and reproduced.

Collins says, "The introductory chapters deal with the anatomy and physiology of the joint tissues and bone. Thereafter, I have arranged the subject matter in a conventional sequence, as indicated in the table of contents, inserting descriptions of those diseases whose cause is still unknown in places which at the present time seem most appropriate. I have tried in this way to present a connected story in which the several diseases of joints and spine are related and compared with one another and orientated within the framework of general pathology."

However, orthopedists, rheumatologists, and radiologists may find the book quite as interesting as pathologists undoubtedly will. It can be recommended to osteopathic physicians, who will find between its covers well-written substantiation for the philosophy of the profession, for example, Collins' explanation of the pathogenesis of osteoarthritis, which begins, "By the time that adult life is reached, the bone ends with their articular cartilages have adapted their shape to the prevailing mechanical conditions. All is well as long as these mechanical conditions are not upset, and many joints do, in effect, remain intact and efficient throughout life. The joint cartilages tend, however, to undergo regressive or involutionary changes with age which render them less resilient and less able to withstand injury. Once cartilage destruction sets in, the evolution of osteoarthritis has begun. There is no longer harmony between form and function. Everything that follows can thereby be explained. Each small loss of cartilage causes a redistribution of the forces acting through the joint, which, in turn, leads to further cartilage destruction and to a gradual alteration in structure and shape of the bone ends, by resorption here and new bone formation there. Adult cartilage can only respond to changing mechanical conditions by degeneration and destruction, but bone responds by regeneration and reconstruction. Since no new cartilage grows, harmony between form and function is never re-

established until the joint is finally stabilised by its deformity rendering further movement impossible. The process of osteoarthritis is a vicious circle of changing mechanical conditions and attempts at structural adaptations.

"Osteoarthritis does not develop rapidly unless there are special circumstances which exaggerate the mechanical disturbance, e.g. genu valgum, coxa vara, Paget's disease, old infective or rheumatoid arthritis, fractures, and exceptional stresses caused by occupation or imposed by deformities of other parts of the body. The majority of people pass through life with no more than slight and symptomless grades of osteoarthritis arising in those constantly exercised joints which carry weight or which have a wide range of movement."

The book is an objective record of the pathological phenomena involved in gout, specific infections of the joints, rheumatic fever, rheumatoid arthritis (for which he acknowledges his debt to Hench), tumors of the joints, intervertebral disks, spinal diseases, such as scoliosis, kyphosis, Paget's disease, Pott's disease, osteophytosis, ankylosing spondylitis, and others. It deserves serious attention.

NUTRITION IN HEALTH AND DISEASE. By Lenna F. Cooper, B.S., M.A., M.H.E., Sc.D., Consultant Dietitian and Formerly Chief of the Department of Nutrition, Montefiore Hospital, New York City; Formerly Food Director, University of Michigan; Dean of School of Home Economics, Battle Creek College; Supervising Dietitian, U. S. Army, World War I; President, American Dietetic Association, 1937-38. Edith M. Barber, B.S., M.S., Writer and Consultant, Food and Nutrition; Food Editor, General Features Syndicate; Formerly Food Editor, New York Sun; Lecturer on History of Cookery and Public Relations for Home Economists, Teachers College, Columbia University. Helen S. Mitchell, A.B., Ph.D., Dean of School of Home Economics, University of Massachusetts; Formerly Principal Nutritionist, Office of Defense, Health and Welfare Services; Professor of Physiology and Nutrition, Battle Creek College. Ed. 11. Cloth. Pp. 744, with illustrations. Price $4.00. J. B. Lippincott Company, East Washington Square, Philadelphia, 1950.

This handy little book is now in its eleventh edition. The authors frankly admit that the book is basically a textbook, but they have tried to treat the subject matter "in such a way as to be suitable for college students and for interested lay readers."

The book is definitely nonprofessional in tone. The absence of long technical explanations and the insertion of information of current interest makes the material easily understood and appreciated by the uninitiated. Excellent illustrative photographs accompany many of the chapters, and graphs and charts are used to present statistical matter. The pages are divided into two columns for easier reading, although the small type somewhat defeats the purpose.

Since the last revision in 1947 the authors have written a new introductory chapter to Part One, Principles of Nutrition, sketching a brief history of the developments leading up to present-day concepts of the science of nutrition. In addition, new introductory material designed to give a picture of world usage and the relative importance of different classes of foods has been added to several other chapters.

Part Two, which deals with Diet in Disease, has been extensively revised to include the latest developments in the dietary management of the sick and convalescent, with special emphasis on high-protein diets for use in the treatment of liver diseases and other debilitating diseases. The sodium content of diets for liver and heart disease and in hypertension is also discussed at length. The order and treatment of this entire section has been arranged largely to correlate with "A Manual for Teaching Dietetics to Student Nurses," prepared by the American Dietetic Association. This in no way limits the book to a textbook for nurses, however.

Part Three, Food Selection and Preparation, discusses food materials and their preparation. Small quantity recipes are included for use by nurses and homemakers who must cook for a single patient or for a small family. This section will appeal particularly to the average housewife who, it is hoped, keeps a diet and nutrition book in her kitchen.

The fourth part of the book is devoted to tabular material and special tests. All material has been brought up to date and a new table on Classification of Foods According to Nutritive Values has been added. A glossary appears at the end of the book giving definitions and pronunciations of the more technical terms used in the text. This again makes the book of particular value to the beginning student or layman. References on each subject are classified by subject in the same order as chapters in the book. All food-value charts and other dietary allowance references have been revised to conform to the latest (1948) Recommended Dietary Allowances.

THE MANAGEMENT OF OBSTETRIC DIFFICULTIES. By Paul Titus, M.D., Obstetrician and Gynecologist to the St. Margaret Memorial Hospital, Pittsburgh; Consulting Obstetrician and Gynecologist to the Shadyside Hospital, Pittsburgh; Secretary of the American Board of Obstetrics and Gynecology; Member Reserve Consultants Advisory Board, Bureau of Medicine and Surgery, United States Navy (Captain, MC, USNR). Ed. 4. Cloth. Pp. 1046, with illustrations. Price $14.00. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1950.

"It is hoped that this book will be found useful to the obstetric specialist, but I have attempted also to make it of as much practical value as possible to general practitioners who are so often the first to see the complicated cases which occur at some time in every community." Thus Titus stated his purpose in first writing this book in 1937. This fourth edition still holds to this purpose.

For this book to continue to be useful, however, constant revision is necessary. No one realizes this more than the author. As an officer attached to the Professional Division of the Navy's Bureau of Medicine and Surgery, Titus was in an excellent position to see and study the great volume of medical research that was done in the Armed Forces during the last war. Back in civilian life as obstetrician and gynecologist at Pittsburgh's St. Margaret Memorial Hospital, he has watched the application of these discoveries result in a lower and lower maternal mortality rate. It is only logical that he should want to revise his major opus to reflect this postwar progress.

In general, the fourth edition follows very closely the arrangement of the third edition. The material has been grouped into eight sections covering Sterility, Difficulties in Diagnosis of Pregnancy, Complications of Pregnancy, Complications of Labor, Obstetric Operations, Complications of the Puerperium, The Newborn Infant, and a section on general topics. A new chapter has been added on "Hyperemesis Gravidarum and Related Conditions," while two chapters, "Toxemia of Pregnancy: Early Weeks" and "Toxemia of Pregnancy: Later Weeks," have been combined into one general chapter on present views on "Toxemia of Pregnancy." He has added new material on developments in sterility studies and treatment, the management of threatened and habitual abortions, the changed management of placenta previa, and the prevention and management of hemorrhage and shock. The author also describes changes in technic including induction of labor, preparation for delivery, perineorrhaphy, and the management of the third stage of labor and of retained placenta. The chapter on general diseases complicating pregnancy was revised and lengthened, and the chapter on pelvic mensuration and evaluation by x-ray was largely rewritten. Finally, Titus has brought up to date methods of analgesia and anesthesia.

One particularly outstanding feature of this edition is the attempt to attain uniformity of definition and terms with other literature in the field. Prior to the publication of this book, Titus met with two other noted obstetricians, J. P. Greenhill and Nicholson J. Eastman, to "attain greater uniformity in certain definitions and terms, and agreement on classifications and procedures about which there has been a lack in these respects." Agreement was reached on such terms as low, mid-, and high forceps, "stations" of the presenting part, and "engagement." Types of breech presentation were specifically labelled and various methods of breech delivery were given definitive names. Certain terms such as "breaking up" of a breech or "wandering" of a forceps blade were dropped. Previous classifications of toxemia were simplified. External caliper measurements of the pelvic inlet

were abandoned and, instead, rules were established for x-ray mensuration and appraisal of pelves. Following the conference C. O. McCormick also concurred in all details of this agreement. Hereafter, this uniform terminology will be used by these authors. It is to be hoped that other writers will follow their lead.

Readers who are considering this book as a permanent addition to their library will be pleased to know that this postwar edition is again printed on durable high gloss paper. The book is further enhanced by the addition of twenty new black and white illustrations and one new color plate.

PROCEEDINGS OF THE FIRST CLINICAL ACTH CONFERENCE. Edited by John R. Mote, M.D. Cloth. Pp. 607, with illustrations. Price $5.50. The Blakiston Company, Philadelphia, 1950.

This collection of 52 papers based on physiologic and metabolic studies of ACTH presented at a conference sponsored by the Armour Laboratories in Chicago, October 21-22, 1949, is, as the editor states, ". . . nothing more than a status report of the projects in progress at the time, and in no case are any of the results presented to be considered finally valid or conclusive. . . . It was obvious to everyone concerned that all the data presented could be only preliminary and tentative since insufficient time had elapsed, and inadequate supplies of the hormone had been available to any one group to allow any final or valid conclusions to be reached." Rarely has any prefatory statement proved so true. All possible haste was made in rushing the reports into print. The book was available in March 1950.

Just as the conference itself was a meeting of minds to promote the assembling and redistribution of accumulated information about the hormone in order to clarify the whole concept, the Proceedings serve that function also. Both information and commentary are stimulating and interesting, regardless of their inconclusiveness. The book contains a fine, factual report of all that was known a year ago of adrenal cortical function in normal human beings and patients ill with various disease syndromes as widely divergent as myasthenia gravis, gout, nephrosis, and rheumatoid arthritis. The Second Clinical ACTH Conference, scheduled for December of this year, will undoubtedly be followed by the publication of Proceedings, which the alert clinician will want to see.

THE PRACTICE OF MEDICINE. By Jonathan Campbell Meakins, C.B.E., M.D., LL.D., D.Sc., Formerly Professor of Medicine and Director of the Department of Medicine, McGill University; Formerly Physician-in-Chief, Royal Victoria Hospital, Montreal; Formerly Professor of Therapeutics and Clinical Medicine, University of Edinburgh; Fellow of the Royal Society of Edinburgh; Fellow of the Royal Society of Canada; Fellow of the Royal College of Physicians, London; Fellow of the Royal College of Physicians, Edinburgh; Honorary Fellow of the Royal College of Surgeons, Edinburgh; Fellow of the Royal College of Physicians, Canada; Fellow of the American College of Physicians; Honorary Fellow of the Royal Society of Medicine. Ed. 5. Cloth. Pp. 1558, with illustrations. Price $13.50. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1950.

One does not envy the author of a well-known book such as "The Practice of Medicine" the chore of revision which justifies a new edition. In the 5 years between the recent editions diagnostic and therapeutic minutiae have specialized and multiplied. Keeping a book for the student and practitioner direct, informative, and practical as well as contemporaneous is a commendable goal and one not often achieved so ably as in Meakins new fifth edition.

Chapters above and beyond the line of duty in a text covering symptomatology, diseases of all the individual organ systems (the genitals being treated under "Diseases of the Ductless Glands") are those on psychosomatic medicine, chemotherapy and antibiotics, diseases caused by allergy, abnormal environments, and chemicals and drugs, all of which contribute to an understanding of the origin of ill health, through a study of man as a whole.

Meakins conceived this text for the use of the general physician, writing in his preface to this latest edition, "The fortunate patients who have access to metropolitan clinics have these [diagnostic and therapeutic] facilities readily available. However, they make up a comparatively small percentage of those who suffer from ill health. Furthermore, human disabilities do not in the main come from rare or exotic diseases, but are due to more obvious and too often neglected causes such as economic, social, and emotional situations."

The table of contents, the index, and cross references within the text are well coordinated. Adequate references for supplementary reading follow each chapter. Had not Meakins exerted some control in the use of illustrations (which, incidentally, are well chosen), the size of the volume might have become impossible. The text is reputable, dependable, and didactic, and is recommended unreservedly.

NUTRITION AND DIET THERAPY. By Fairfax T. Proudfit, Formerly, Instructor in Nutrition and Diet Therapy, University of Tennessee College of Medicine and University of Tennessee School of Nursing; Director of Dietary Department, John Gaston Hospital, Memphis, Tennessee, and Corinne Hogden Robinson, Lecturer in Nutrition and Dietetics, Temple University School of Medicine, Philadelphia. Formerly, Instructor in Nutrition and Diet Therapy, Columbia University School of Nursing. Ed. 10. Cloth. Pp. 950, with illustrations. Price $4.00. The Macmillan Company, 60 Fifth Avenue, New York 11, 1950.

First published in 1918, "Nutrition and Diet Therapy" has been revised regularly every 3 or 4 years until now it is in its tenth edition. This constant re-evaluating of the subject matter has been necessitated, according to the authors, by the rapid progress continually being made in the science of nutrition and its practical applications. This particular edition has also been influenced by improved teaching technics. Although a useful reference for nutritionists, dietitians, and physicians in general, this edition is intended primarily as a textbook for students in nursing. Consequently, the authors have taken great pains to correlate the material with the new "Manual for Teaching Dietetics to Student Nurses" prepared by the American Dietetic Association.

The tenth edition follows closely the physical arrangements of the preceding edition. The book is divided into five sections: Normal Nutrition, Normal Nutrition in Special Conditions, Diet Therapy, Practical Applications of Nutrition—Elementary Cookery, and Recipes. Each section is amply illustrated with charts, tables, and diagrams, and an extensive bibliography substantiates the authors' views. Over 300 additional references, arranged by subject matter, follow the bibliography.

This edition features several worthwhile improvements. The material dealing with diets has been revised to include the 1948 Recommended Dietary Allowances and the section on diet therapy has been completely rewritten. There is an interesting, although necessarily cursory, chapter on feeding the foreign born. Recipes are grouped together in one section and the authors have included a separate recipe index. The appendix is of particular value to teachers. It contains an outline for dietary case studies, and suggestions for planning a course in diet therapy and for correlating lecture and laboratory work in nutrition and cookery courses. The typography is excellent. The book suffers from a dearth of good illustrative photographs. Nevertheless, it is an outstanding book in the field and highly recommended to teachers and workers in nutrition and dietetics. The average physician, too, will find it a useful addition to his professional library.

Conventions and Meetings

Announcements

American Osteopathic Association, Fifty-Fifth Annual Convention, Milwaukee, July 16-20, inclusive. Program Chairman, Paul Atterberry, Milwaukee.

American College of Osteopathic Internists, Continental Hotel, Kansas City, Mo., October 23-26. Program Chairman, Stuart Harkness, Des Moines, Iowa.

American College of Osteopathic Obstetricians and Gynecologists, Hotel Continental, Kansas City, Mo., February 19-21. Convention Executive, Bernard Abel, Toledo, Ohio.

American College of Osteopathic Surgeons, Hotel Savery, Des Moines, Iowa, October 15-19. Program Chairman, Howard A. Graney, Des Moines, Iowa.

American Osteopathic Academy of Orthopedics, Hotel Savery, Des Moines, Iowa, October 15-19. Program Chairman, Harry F. Shaffer, Detroit.

American Osteopathic College of Radiology, Hotel Savery, Des Moines, Iowa, October 15-19; Board of Governors, October 11. Program Chairman, D. W. Hendrickson, Wichita, Kans.

American Osteopathic Hospital Association, Hotel Savery, Des Moines, Iowa, October 15-19. Program Chairman, Mr. Edward C. Barron, Detroit.

American Osteopathic Society of Proctology, Hotel Durant, Flint, Mich., May 10-12. Program Chairman, John J. Mahannah, Warren, Ohio.

American Society of Osteopathic Anesthesiologists, Hotel Savery, Des Moines, Iowa, October 15-19. Program Chairman, Crawford M. Esterline, Kirksville, Mo.

Arizona, annual meeting, Tucson, April 4-6.

Arkansas, October 26.

California, annual meeting, Long Beach, May 24-26; House of Delegates, May 22-23.

Canadian Osteopathic Association, international convention, General Brock Hotel, Niagara Falls, Ontario, October 19-21. Program Chairman, Norman W. Routledge, Chatham, Ontario.

Colorado: See Rocky Mountain Conference.

Georgia, midyear meeting, Atlanta, October 1. Program Chairman, R. E. Andrews, Rome.

Indiana, annual meeting, Leland Hotel, Richmond, May 6-8. Program Chairman, Fred L. Swope, Richmond.

Kansas, annual convention, Allis Hotel, Wichita, October 1-4. Program Chairman, Irwin J. Conant, Meriden.

Kentucky, Brown Hotel, Louisville, October 5, 6. Program Chairman, Martha Garnett, Louisville.

Louisiana, Monteleone Hotel, New Orleans, October 27-28. Program Chairman, R. H. Walton, New Orleans.

Maine, Fall Conference, Hotel Elmwood, Waterville, November 17, 18. Program Chairman, John L. Crowther, Bangor. Postgraduate Seminar, Bangor, April; annual convention, Samoset Hotel, Rockland, June 22-23.

Michigan, annual meeting, Civic Auditorium, Grand Rapids, October 2-5; House of Delegates, October 1, 2. Program Chairman, Ralph F. Kraker, Ann Arbor.

Missouri, Jefferson Hotel, St. Louis, October 12-14. Program Chairman, Theodore Corcanges, Raytown.

New York, Hotel Marcy, Lake Placid, October 13, 14. Program Chairman, Charles K. Smith, Elmira.

Northwest Osteopathic Convention, Portland, Ore., June 4-7. Program Chairman, Harold D. Groves, Portland, Ore.

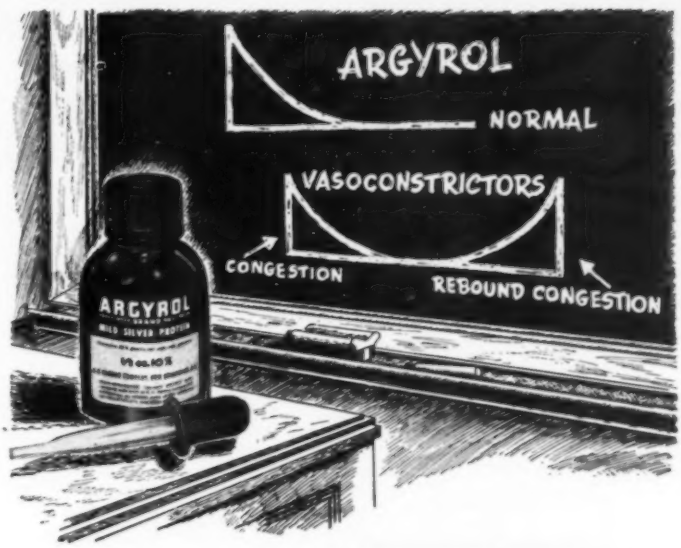
Ohio, refresher course, Cleveland, November 8-10. Program Chairman, Donald V. Hampton, Cleveland. Annual meeting, Neil House, Columbus, May 6-9. Program Chairman, Roger E. Bennett, Middletown.

Oklahoma, Biltmore Hotel, Oklahoma City, November 7-9. Program Chairman, Daniel B. Heffelfinger, Oklahoma City.

Oregon: See Northwest Osteopathic Convention.

Osteopathic College of Ophthalmology and Otorhinolaryngology, Ambassador Hotel, Los Angeles, November 1-3. Board of Trustees of the College and American Osteopathic Board of Ophthalmology and Otolaryngology, October 30, 31. Program Chairman, Edward W. Davidson, Los Angeles.

Rocky Mountain Conference, Broadmoor Hotel, Colorado Springs, Colo., November 10-12.



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South Dakota, annual meeting, Cataract Hotel, Sioux Falls, June 3-5.

Tennessee, Andrew Jackson Hotel, Nashville, October 6-8. Program Chairman, Richard Alexander, Greenback.

Texas, midyear meeting, Amarillo, October 8-10; annual meeting, Houston, April. Program Chairman for annual meeting, H. G. Grainger, Tyler.

Vermont, annual meeting, Rutland, October 4, 5. Program Chairman, M. C. Smith, Bennington.

Washington: See Northwest Osteopathic Convention.

West Virginia, Shenandoah Hotel, Martinsburg, May 13-15. Program Chairman, Edward D. Hersh, Weirton.

Wisconsin, Hotel Schroeder, Milwaukee, May 10-11.

Wyoming, annual convention, Rawlins, June 2-3.

OFFICIAL AND AFFILIATED ORGANIZATIONS

ARIZONA

Maricopa County

The Arizona State Department of Health plans to show films on the diagnosis of venereal disease, and to discuss the contributions of the osteopathic profession to the problem of venereal disease, at the meeting on October 8.

CALIFORNIA

State Society

In the July JOURNAL, Elbert W. Ashland, Oakland, was incorrectly reported as head of the Department of Health Insurance. This position is held by David B. Bosworth, Oakland.

Thomas G. Mallard, Pasadena, was incorrectly reported as head of the Department of Historian in the September JOURNAL. Dain L. Tasker, Oceanside, holds that position. Dr. Mallard is head of the Department of Membership.

Los Angeles City

The officers are: President, Robert M. Loveland; president-elect, Crichton C. Brigham; secretary-treasurer, Betsy B. MacCracken (re-elected), all of Los Angeles.

The trustees are Samuel G. Biddle, H. Mayer Dubin, David H. Payne, and Ansen P. Williams of Los Angeles, and Edwin H. Riedell, Whittier.

Committee chairmen are: Program, Jack R. Scoles; membership, Dr. Payne; ethics, Walter V. Goodfellow; child health, Dr. Dubin; house committee, Arthur E. Miller, all of Los Angeles, and publications, Elizabeth Dodds Beach, Glendale.

A meeting was scheduled to be held September 12.

San Jose

F. O. Edwards, San Jose, spoke on a paper published in the January JOURNAL, "Articular Facets and the Osteopathic Spinal Lesion," at the meeting in San Jose on August 12, 1950.

COLORADO

State Society

The October meeting is to be held in Loveland, according to an advance announcement. The September meeting was to have been held in Glenwood Springs.

FLORIDA

District Seven

A partial listing of officers was given in the July JOURNAL. In addition, Annie S. Newsome, Sebring, is secretary-treasurer, and W. S. Horn, Palmetto, is trustee. There are no committees.

GEORGIA

State Society

J. Milton Zimmerman, Dayton, Ohio, was to be the principal speaker at the annual Fall Conference in Atlanta on October 1. Besides Dr. Zimmerman's talks several technic sessions and forums were scheduled.

ILLINOIS

District Four

The officers are: President, Paul Gene Clark, Chenoa; vice president, Morgan D. Sours, Bloomington; secretary-treasurer, Roberta E. Mies (re-elected), Pontiac.

L. E. Patton, Morton, and Sam W. Axtell, Lexington, are the trustees.

IOWA

Polk County

The officers are: President, Henry James Ketman; vice president, Harry B. Elmets; secretary, Clayton O. Meyer; and treasurer, Burton E. Poundstone. All are from Des Moines.

Donald E. Sloan, Des Moines, is the trustee.

Committee chairmen are: Membership, Dr. Poundstone; ethics, Edward F. Leininger: hospitals and clinics, Edward F.

Minnick; convention program and convention arrangements, Rachel Hodges Woods; legislation, Howard A. Graney; vocational guidance, Beryl Freeman; public health and statistics, J. R. McNerney; and public relations, Paul E. Kimberly. All are from Des Moines.

Woodbury

The officers were announced in the August JOURNAL. In addition, Raymond S. Farran, Sioux City, is representative for the Iowa Safety Congress.

KANSAS

State Society

According to an advance announcement, the following talks were to be presented at the annual convention in Wichita, October 1-4: "Allergies," Herman T. Still; "Clinical Laboratory Interpretations," Claus A. Rohweder; "Endocrine Anomalies," Max T. Gutensohn, all three of Kirksville, Mo.; "Public and Personal Relations in Osteopathic Practice," Richard G. Gibson, Winfield; "Osteopathy as a Science," and "Cranial Osteopathy and Its Application and Technic," Glenn A. Baird, Hiawatha; "Diagnosis and Management of Acute Myocardial Infarction and Failing Compensation," Milton S. Steinberg; "Management of Diabetes Mellitus," Robert S. Sedar; "Somatic Changes in Gastrointestinal Disorders," "Emotional Factors in Gastrointestinal Disorders," and "Common Neuromuscular Diseases as Seen by the General Practitioner," Clayton H. Morgan, all three speakers of Kansas City, Mo.; "Various Types and Application of Rectal Anesthesia," Thomas B. Powell; "Office Emergencies," B. L. Gleason, both of Larned; and "Roentgen Diagnosis of Low-Back Problems," D. W. Hendrickson, Wichita.

Also on the program were two films, "The Function of the Ear in Health and Disease" and "Otitis Media in Pediatrics."

Arkansas Valley

At the July 20 meeting in Larned C. E. Hammer, Larned, spoke on "Malignancy of the Prostate."

Eastern Kansas

The officers are: President, Homer N. Flora, Ottawa; vice president, A. A. Mailhiot, Lawrence; and secretary-treasurer, Thomas O. Osborn (re-elected), Colony.

Mid-Kansas

The officers are: President, Robert G. Waddill, Burns; vice president, J. D. Raynesford; and secretary-treasurer, M. B. Willems, both of Hillsboro.

Ross O. Shook, Hutchinson, Dr. Waddill, and Ralph W. Burditt, Moundridge, are the trustees.

Southeast Kansas

The officers are: President, W. H. Dunlap, Girard; vice president, Ivy E. Hancock, Independence; and secretary-treasurer, Robert V. Cartwright (re-elected), Chanute.

Committee chairmen are: Membership, J. E. Freeland, Coffeyville; ethics, Stanley E. Davis, Columbus; hospitals, E. A. Rindt, Fredonia; clinics, Arthur E. DuMars; convention program, David D. Harbaugh, both of Coffeyville; convention arrangements, Riley S. King, Neodesha; statistics, Dr. Hancock; legislation, D. B. Fordyce, Oswego; vocational guidance, Cecil H. Farley, Independence; public health, Lewis C. Pickrell, Baxter Springs; industrial and institutional service, Margaret C. Wolf, Chanute; and public relations, Dr. Cartwright.

Southwestern Kansas

The officers are: President, Oscar C. Kappler, Liberal; vice president, Roy A. Leopold, Garden City; secretary-treasurer, R. A. Sabo (re-elected), Lakin.

The trustees are V. A. Leopold and George L. Noll, Garden City, and Eugene F. Pellette, Liberal.

Accumulating evidence[1,2] is more firmly establishing the ability of inositol to reduce abnormally high blood cholesterol levels. This lipotropic agent activity has been demonstrated not only in patients with liver disease, but also in the presence of diabetes mellitus.[3]

Since hypercholesterolemia is regarded as a forerunner of atherosclerosis which in turn leads to local or generalized arteriosclerosis, inositol constitutes a sound weapon for the prevention or active treatment of degenerative arterial disease. Although the lipotropic activity of inositol is evident in the absence of all other therapy, the use of a high protein, low fat diet and the administration of other B complex vitamins is also advisable.

Inositol-C.S.C., supplied in 0.5 Gm. tablets, is indicated whenever lipotropic action of this substance is required. Average dose, 1.0 Gm. three times daily.

(1.) Felch, W. C.: New York Med. *5*:16 (Oct. 20) 1949. (2.) Leinwand, I., and Moore, D. H.: Am. Heart J. *38*:467 (Sept.) 1940. (3.) Felch, W. C., and Dotti, L. B.: Proc. Soc. Exper. Biol. & Med. *72*:376 (Nov.) 1949.

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MAINE

State Society

The officers, members of the board of directors, and committee chairmen were reported in the August JOURNAL. Vernon H. Lowell, Portland, has succeeded W. Brock Roben as president. Dr. Roben died August 3.

The meeting scheduled for Houlton, October 13 and 14, has been cancelled. The fall meeting has been tentatively scheduled for Waterville, in November.

Cumberland County

The officers are: President, Everett S. Winslow; vice president, M. Carman Pettapiece; and secretary-treasurer, Louise M. Jones, all three of Portland.

There are no committees.

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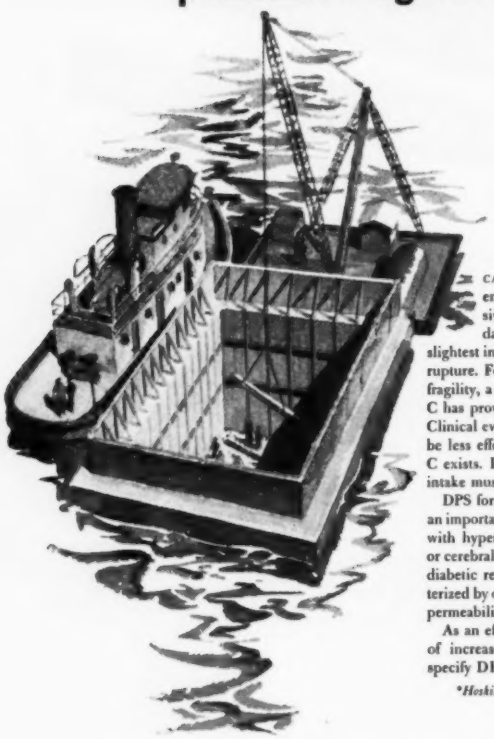

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*Hoskins, H. W.: Rutin, Amer. Druggist 115:98 June 1947

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MICHIGAN

State Society

According to an advance announcement, the program of the annual convention in Grand Rapids October 2-5 was to include the following: "Minor Office Surgery," Verne H. Dierdorff, Wyandotte, and Louis J. Machovec, Trenton; "Major Surgery and the General Practitioner," Raymond A. Biggs, Detroit; "Athletic Injuries," Arthur E. Allen, Minneapolis, Minn.; "Minimizing Industrial Injuries," Mr. D. Ross Farra, Grand Rapids; "Recent Advances in Chemotherapy and Vitamin Research," Royal S. Lee, D.D.S., Los Angeles, Calif.; "Public Information Media and Mental Health," Raymond N. Farber, Ph.D., Highland Park; "Geriatric Medicine," Grover N. Gillum, Kansas City, Mo.; "Chalk Talk on Anorectal Anatomy," Frank D. Stanton, Boston, Mass.; "What of the Cervix," Margaret Jones, Kansas City, Mo.; "Common Pitfalls in Obstetrical Practice," Roy G. Bubeck, Grand Rapids; "Medical Jurisprudence," Mr. H. William Butler; a talk by Mr. Lawrence Mills, Chicago, on Michigan's function in osteopathic education; a paper by Mr. Harve Lamont Smith, "Tested Methods of Public Relations," to be presented by Willis H. Yeamans, Mount Clemens; a discussion session, "Osteopathic Management of Injuries to Extremities: Knee-Ankle-Foot," Dr. Allen, "Shoulder-Elbow-Wrist," W. Fraser Strachan, Chicago, and "Reduction of Dislocations," J. Paul Leonard, Detroit; a special session for secretaries and receptionists, including a talk on office ethics by Ralph Lindberg, Detroit, one on public relations by Dr. Yeamans, and one on the legal aspects of insurance by Mr. Butler; and osteopathic demonstration sessions conducted by Drs. Allen, Strachan and Leonard; assisted by Clarence W. Reinhart, Monroe, and Arthur B. Holzworth, Chicago.

Oakland County

The officers are: President, George E. Renton, Jr., Royal Oak; vice president, Douglas H. Kiphut, Berkley; secretary-treasurer, Mary L. Latos, Hazel Park.

Edward G. Sluyter, Royal Oak, and Luther G. Huddle, Ferndale, are the trustees.

MINNESOTA

Minneapolis

The officers are: President, Leslie S. Keyes; vice president, Constance Idtse; secretary, Robert M. Plasch; and treasurer, Anna Reznikov (re-elected). All are from Minneapolis.

MISSOURI

State Society

Advance announcements of the program of the annual convention in St. Louis on October 12-14 included the following talks: "Thrombo-Embolic Disease" and "Differential Diagnosis of Jaundice," Neil R. Kitchen; "Diagnosis of Surgical Conditions of the Lower Abdomen" and "Diagnosis of Surgical Pathologies of the Upper Abdomen," Raymond A. Biggs; "Diagnosis and Treatment of the Painful Hip" and "The Post-Reduction Care of Fractures," J. Paul Leonard; "Tumors of the Bones" and "Radiographic Diagnosis of Pathologies of the Upper Abdomen," Charles J. Karibo, all four of Detroit; a symposium on urological problems in general practice, Drs. Biggs, Kitchen, and Karibo, with Dr. Kitchen as moderator; "The Basis for Spinal Etiology of Disease," and "Clinical Implications of Research on Osteopathic Lesions," Irvin M. Korr, Ph. D., Kirksville; "The Missouri Division of Health," Buford G. Hamilton, M.D., Richmond; "Atomic Bomb Casualties and Radiation Syndromes," Grover N. Gillum, Kansas City; "Rural Health Clinic Program in Missouri and the Osteopathic Profession," Vernon H. Casner, Kirksville; and "Veteran's Affairs," Mr. Percy M. Gash, St. Louis.

Buchanan County

The officers are: President, Neva M. Steidley; vice president, Leonard J. Grinnell; and secretary-treasurer, M. L. Troop, all from St. Joseph.

Clifford L. Steidley, St. Joseph, is the trustee, and Dr. Grinnell is the alternate trustee.

Committee chairmen are: Membership, Dr. Grinnell; ethics, H. N. Tospon; hospitals, C. L. Steidley; clinics, William P. Lenz; statistics, Nelle D. Turney; convention program and convention arrangements, Lambert H. Pearson; legislation, J. G. Jewett; vocational guidance, Bernard S. Gould; public health, John M. Spencer; industrial and institutional service, Benjamin M. Riles; public relations, E. U. Shackelford; and civilian defense, Foy Trimble. All are from St. Joseph.

Central Missouri

The officers are: President, Ernest P. Hansen, Frankford; vice president, John S. Haydock, Cairo; secretary-treasurer, Alvord N. MacRae, Warrenton.

Benjamin S. Jolly, Moberly, is the trustee, and Lloyd E. Hutchins, Fulton, is alternate trustee.

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1. Blinick, G.; Steinberg, P., and Merendino, J. V.: Am. J. Obst. & Gynec. 58:176, 1949. 2. Marbach, A. H.: Am. J. Obst. & Gynec. 55:511, 1948.

*Sulfathiazole, N'acetylsulfanilamide, N'benzoylsulfanilamide

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GYNECIC PHARMACEUTICALS

A meeting was held in Florida on August 17.

Central Ozark

Thelma Buckthorpe, M.D., Waynesville, spoke on poliomyelitis at the August 3 meeting in Arlington. The next meeting was scheduled to be held in Vienna on September 7.

North Central

Wallace M. Pearson, Kirksville, was the principal speaker at the meeting in Brookfield on August 17.

Northeast

The officers and trustees were reported in the July JOURNAL. Committee chairmen are: Membership, William A. Jones; convention program, N. Sue Grassele; legislation, V. H. Casner, all three of Kirksville, and public relations, Peter A. Hopkins, Hannibal.

"Present Day Aspects of Cranial Osteopathy" was the title of a talk given by Paul E. Kimberly, Des Moines, Iowa, at the August 10 meeting in Baring.

Ozark

The officers are: President, Frank B. Irwin, Springfield; vice president, J. H. LePere, Stockton; and secretary-treasurer, Elmer L. Williams, Springfield.

St. Louis

The officers are: President, James D. Hicks; vice president, John C. Olson; and secretary-treasurer, Janet G. Meredith, all of St. Louis.

West Central

A meeting was held August 17 in Clinton.

NEVADA

State Society

The officers and trustees were reported in the July JOURNAL. Committee chairmen are: Legislative, Fred V. Griffith, Reno; membership, Harry Bernstein, Reno; public affairs, Ralphae G. Jennings, Minden; and bylaws, L. F. Licklider, Reno.

NEW MEXICO

State Society

According to an advance announcement, the following papers were to be presented at the annual convention in Gallup September 14-16: "Thoracic Surgery" and "A.O.A. Problems," Vincent P. Carroll, Laguna Beach, Calif.; "The Knee Joint: Differential Diagnosis and Treatment" and "The Shoulder Girdle: Differential Diagnosis and Treatment," N. E. Atterberry, Denver, Colo.; "A Review of Protein Chemistry and the Amino Acids," and "Non-Nutritional Causes of Mineral-Vitamin Deficiencies," Mr. Emory W. Thurston, Los Angeles; "Clinical Pathology, Practical Application and Interpretation," W. H. Haid, Director of the Albuquerque Clinical Laboratories, Albuquerque; and "Public Relations," Mr. W. B. McCollum, Albuquerque.

NEW YORK

State Society

The program for the annual meeting at Lake Placid, October 13 and 14, was to include the following talks, according to an advance announcement: "Bedside Differential Diagnosis of Pneumonias," Harold Yablin, Buffalo; "Radiological Diagnosis of Acute Pulmonary Disease" and "Radiographic Diagnosis of the More Common Joint Diseases," Paul T. Lloyd, Philadelphia; "Diagnosis of Acute Abdominal Pain" and "Treatment of the Hypermobile Joint," Earl H. Gedney, Bangor, Maine; "The Management of Acute Coronary Infarction," James H. Reid, Rochester; "Psychoneurosis: Social and Economic Aspects," Sydney M. Kanev; "Types of Psychoneuroses and Their Amenability to Treatment," Emmanuel A. Manginelli, M.D., both of New York; "Re-evaluation of Therapy in Rheumatoid Arthritis," Elizabeth S. Carlin, Hempstead, Long Island; "Accessory Sacroiliac Articulations with Arthritic Changes," Lee A. Hadley, M.D., Syracuse; "A Diagnostic and Etiologic Analysis of Hypochromic Anemias," Rudolph Gerber, New York; "The Trend Toward Conservatism in Disk Management," and "Approach to the Acute Low-Back Problem with Radiating Pain," C. Gorham Beckwith, Hudson; "The Responsibility of Free Medicine for Social Insurance," Miss Mary H. Donlon, New York; and "How Your State Society Serves You," Robert E. Cole, Geneva.

Westchester County

The officers are: President, Orlo R. Clark, Jr., White Plains; vice president, Franklin E. Abel, Yonkers; secretary, Ernest M. Hunt, White Plains; and treasurer, Alfred R. Gildersleeve, Mount Vernon.

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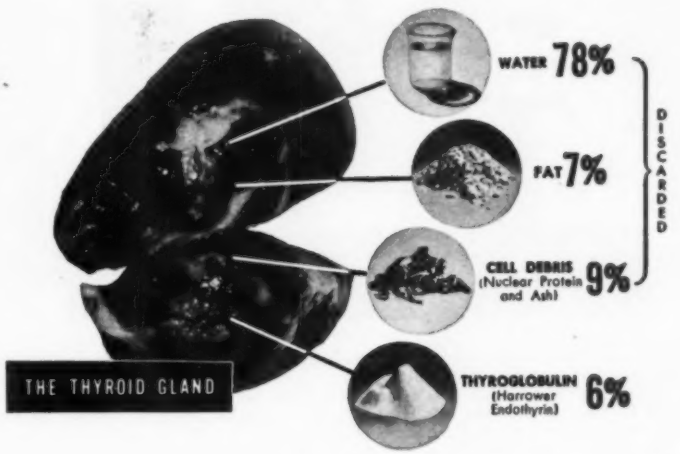

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NORTH CAROLINA
State Society

A one-day refresher course was to be offered by the society on September 30, in Asheville. Perrin T. Wilson, Cambridge, Mass., was to give the following talks: "Finding the Still Lesion," "Osteopathic Therapy for Asthma," "Osteopathic Therapy for Sciatica," and "Osteopathic Therapy for the Painful Shoulder." Physicians from the neighboring states of Tennessee, Virginia, South Carolina, and Georgia were invited to attend.

OHIO
Ninth District Academy (Warren)

The officers were reported in the July JOURNAL. Committee chairmen are: Membership, Kenneth S. Fleming, Youngstown; ethics, Myron W. Riegle, Salem; clinics, C. M. Mayberry, East Liverpool; public relations, R. G. Davis, Niles; hospitals, Robert P. Southard; statistics, Edythe M. Varner; legislation, Anthony Candella; vocational guidance, J. F. Reid; public health, John J. Mahannah; and industrial and institutional service, R. E. Sowers, the last six all of Warren.

Thirteenth District Academy (Columbus)

A partial listing of officers and trustees was given in the August JOURNAL. In addition, R. L. Thomas and W. Duane Burnard, both of Columbus, are trustees.

Committee chairmen are: Membership, Gordon F. Sherwood; public affairs, Robert G. Mertens; ethics (grievances), Dr. Thomas; radio, Norbert A. Heickelbech; hospitals, Leo R. Conley, all of Columbus; physicians' relocation, James E. Cover, Groveport; professional affairs, R. H. Gibson, Marysville; professional liability, Ralph S. Licklider; auditing, Ralph T. VanNess, both of Columbus; convention program, Donald E. McBride, Westerville; golf, A. V. Benedict; legislation and legal, James O. Watson; vocational guidance, William K. Lowry; and industrial relations, Harold E. Clybourne, the last four of Columbus.

Fourteenth District Academy (Marietta)

The officers are: President, William H. Nicholson; vice president, W. A. Larrick; and secretary, L. H. Schreck, all of Cambridge.

OKLAHOMA
State Society

The following talks are to be included in the program of the annual convention in Oklahoma City November 7-9, according to an announcement received in advance: "Etiology of the Arthritides," "Comprehensive Diagnosis," and "Management of the Arthritic Patient," E. C. Andrews, Ottawa, Ill.; "The Approach to Low-Back Problems," "Miscellaneous Technic," and "Shoulder Problems, Diagnostic and Management," John W. Mulford, Cincinnati, Ohio; "Anatomy of the Female Perineum and Pelvis," Richard R. Stuart, Ph.D., Los Angeles; "Public Relations," "Efficient Office Management," and "The General Practitioner, the Hospital Staff, and the Hospital," Mr. William S. Konold, Columbus, Ohio; and "Communicable Diseases and Their Control," James O. Wails, M.D., Oklahoma City.

Oklahoma-Canadian

A meeting was scheduled for September 12, in Oklahoma City.

PENNSYLVANIA
State Society

A detailed listing of the talks, and a partial listing of the teaching sessions included in the program of the annual convention in Philadelphia September 22-24 was given in the August JOURNAL. A detailed listing of the teaching sessions follows.

Session on Osteopathic Medicine, Ralph L. Fischer, Philadelphia, chairman: "The Principles Used in Determining an Adequate Diet for Adults," Albert C. Kette, Jr., Hatfield; "Calculating the Diabetic Diet," William C. Weisbecker, Philadelphia; "The Diet in Cardiovascular Diseases, Including the Rice Diet," William E. Buller, Allentown; "Diets in Arthritis, Including Gout," John J. McHenry; "Jaundice—Its Importance in General Practice," Earl F. Riceman, both of Philadelphia; "The Present Status of Chemotherapy and Hormonal Therapy in Cancer," Lewis M. Yunginger, Bird In Hand; "Cough—Its Diagnostic and Therapeutic Considerations," Wilbur P. Lutz; "The Treatment of Anemia," Clarence E. Baldwin; "Heart Failure," Ralph J. Tomei, all three of Philadelphia; and "Bacterial Endocarditis," K. T. Steigelman, York.

Session on Non-Institutional Surgery, Galen S. Young, Philadelphia, chairman:

"Diagnosis and Treatment (Practical) of Cellulitis, Carbuncles, Boils, and Lipomas," Harry E. Binder and Paul S. Young; "Diagnosis and Ambulant Treatment of Rectal Diseases Encountered by the General Practitioner," Abraham Levin, all three of Philadelphia; "Simple Fractures—Diagnosis and Management with a Practical Discussion of Office Procedures," Glen W. Cole, Norristown, and Charles H. Brimfield, York; "Diagnosis and Treatment of Melanomas, Sebaceous Cysts, and Epitheliomas," Warren H. Swenson, Philadelphia, and Charles A. Hemmer, Lansdowne; "Discussion and Management of Various Types of Wounds Occurring on Head, Face, and Neck, with Demonstration of Sutures Utilized," John W. Sheetz, Philadelphia, and Rudolph F. Rigano, Lancaster; and "Modern Management of First, Second, and Third Degree Burns with Practical Demonstrations," George H. Court, Upper Darby, and Hubert A. Wagner, Philadelphia.

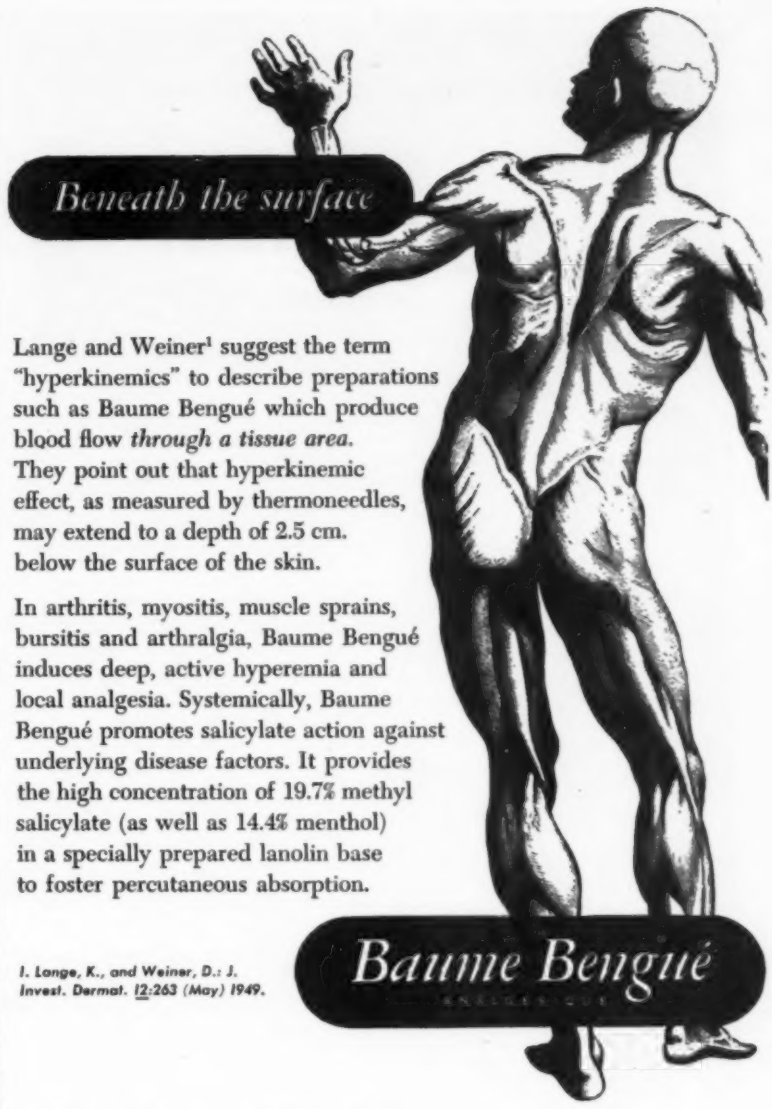
Session on Obstetrics and Gynecology, Frank E. Gruber, Philadelphia, chairman: "Treatment of Prolapse in the Aged: Conservative and Surgical Treatment," Herman Kohn; "Induction of Labor with Particular Emphasis on Intravenous Pituitrin and Modern Obstetrical Methods," Lester Eisenberg, both of Philadelphia; and "Office Treatment of Common Gynecological Disorders," Dr. Gruber.

Session on Osteopathic Therapeutics, David Heilig, Philadelphia, chairman: "Demonstration of Lift Therapy," with slides, Dr. Heilig; "Comparative Therapeutics of Acute Infectious Diseases," Clyde S. Saylor; "Headache," Barbara Redding, both of Philadelphia; "Foot Signs of Lumbar and Pelvic Disturbances," Edward B. Sullivan, Boston, Mass.; "Outlining Specific Structural Adjustment," Perrin T. Wilson, Cambridge, Mass.; "Find It, Fix It, and Leave It Alone," Thomas L. Northup, Morristown, New Jersey; "Treatment of Lesions at the Lumbo-Pelvic Junction," Warren A. Pratt; and "Follow-Up Treatment in Shoulder Syndromes," Kermit H. Lyman, the last two both of Upper Darby.

Session on Pediatrics, William S. Spaeth, Drexel Hill, chairman: "Immediate Care for the Premature Baby," and "Latest Treatment of Acute Infections," Otto M. Kurschner; "Methods in the Care of the Newborn," Samuel L. Caruso; "The Common Cold" and "Child Nutrition," Arnold Melnick; "Differential Diagnosis of Acute Infections" and "Acute Abdominal Pain," Thomas F. Santucci; "Atopic Eczema and Feeding the Allergic Infant and Child," Leopold Salkind; "Tuberculosis in the Child," Sherwood Berman, all of Philadelphia, and "Skin Tests and Their Value" and "The Value of Antihistamine Drugs," Ernest T. Talone, Norristown.

Dauphin County

The officers are: President, J. Kenneth Miller; vice president, Donald R. Harper, both of Harrisburg, and secretary-treasurer, William A. Blacksmith, Jr., Lemoyne.



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1. Lange, K., and Weiner, D.: J. Invest. Dermat. 12:263 (May) 1949.

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RHODE ISLAND
State Society

Officers and some committee chairmen were given in the July JOURNAL. Additional committee chairmen are: Ethics, Ralph B. Craig, East Providence; rules, William B. Shepard; membership, F. Chandler Dodge; vocational guidance, Richard Dowling, all three of Providence; and sickness, Celia S. Craig, East Providence.

TEXAS
District Ten

The officers were reported in the August JOURNAL. Committee chairmen are: Ethics, Edwin S. Davidson; hospitals, G. G. Porter; clinics, Samuel H. Hitch; statistics, Edward M. Whiteacre; legislation, W. D. Danks, Jr.; vocational guidance, Henry A. Spivey; industrial and institutional service, Lawrence J. Lauf; public relations, Horace A. Emery; convention arrangements, Richard M. Mayer, all of Lubbock; convention program, Joe P. Alexander, Spur; membership, Harry E. Williams, Abernathy; and public health, James M. Shy, Silverton.

George J. Luibel spoke on the concept of osteopathic health, and Phil R. Russell discussed association affairs at the July 30 meeting in Lubbock. Both speakers are from Fort Worth.

WEST VIRGINIA
Ohio Valley

The officers are: President, Paul B. Jones, Wellsburg; vice president, C. M. Mayberry, East Liverpool; and secre-

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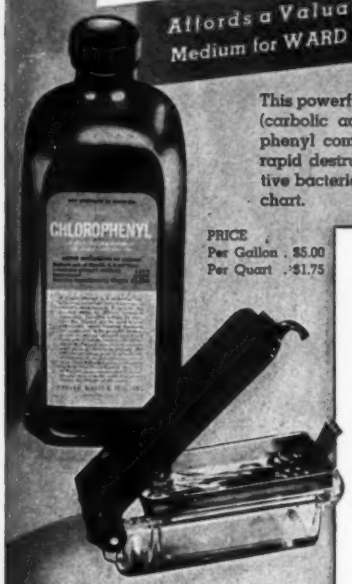

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Vegetative Bacteria	50% Dried Blood	Without Blood
Staph. aureus	15 min.	2 min.
E. coli	15 min.	3 min.
Strept. hemolyticus	15 min.	15 sec.

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tary-treasurer, Donald G. Willis, Wellsburg.

"Hypertension and Its Connection with Osteopathy" was the title of a talk given by John C. Halley, New Martinsville, at the August 24 meeting.

The next meeting was scheduled to be held in East Liverpool on September 28, with J. E. Wiemers, Marietta, as guest speaker.

Southern West Virginia

A meeting was held in White Sulphur Springs on August 13. The next meeting was planned to be held in Beckley.

CANADA

Canadian Osteopathic Association

Speakers at the annual convention to be held in Niagara Falls, Ontario, on October 19-21 are William A. Ellis, Grand Rapids, Mich., Paul E. Kimberly, Des Moines, Iowa, J. S. Denslow, Kirksville, Mo., and Arthur B. Vogelsang, M.D., London, Ontario, according to an advance announcement.

State and National Boards

ARIZONA

Basic science examinations December 19 at the University of Arizona, Tucson. Applications must be filed by December 5. Address Mr. Francis A. Roy, secretary, Basic Science Board, Science Hall, University of Arizona, Tucson.

ARKANSAS

Basic science examinations in October. Address L. G. Gebauer, M.D., secretary, Basic Science Board, 701 Main Street, Little Rock.

COLORADO

Professional examinations January 2. Address Miss Beulah H. Hudgens, executive secretary, Board of Medical Examiners, 831 Republic Bldg., Denver 2.

Basic science examinations December 6 and 7. Applications should be filed on or before November 22. Address Esther B. Starks, D. O., secretary, Basic Science Board, 1459 Ogden St., Denver.

CONNECTICUT

Professional examinations November 14. Address H. Wesley Gorham, D. O., secretary, Osteopathic Examining Board, 520 West Avenue, Norwalk.

DELAWARE

Examinations January 9-11. Address Joseph McDaniel, M.D., secretary, Board of Medical Examiners, 229 State Street, Dover.

FLORIDA

Professional examinations December 2, 3 in Jacksonville. Applications must be filed by November 18. Address Richard S. Berry, D. O., secretary, Board of Osteopathic Medical Examiners, 617-18 Times Bldg., St. Petersburg 5.

Basic science examinations November 11 in Gainesville. Applications must be filed by October 30. Address M. W. Emmel, D.V.M., secretary, Board of Examiners in the Basic Sciences, University of Florida, Gainesville.

HAWAII

Examinations January 10. Address Mabel A. Runyan, D. O., secretary, Board of Osteopathic Examiners, 2333 C. Kalakaua Avenue, Honolulu 30.

IDAHO

Examinations November 9 in Boise. Applications must be filed 15 days prior to the examination. Address D. W. Hughes, D. O., secretary, Board of Osteopathic Examiners, 203 Noble Bldg., Boise.

ILLINOIS

Examinations in January in Chicago. Applications must be filed 15 days prior to the examination. Address Charles F. Kervin, Superintendent of Registration, Illinois Department of Registration and Education, State House, Springfield.

IOWA

Basic science examinations January 9 in Des Moines. Address Ben H. Peterson, Ph. D., Coe College, Cedar Rapids.

KANSAS

Dewey B. Wallace, Belleville, has been reappointed to the Board of Osteopathic Examination and Registration for a term ending May, 1954.

MAINE

Examinations November 14 in the State House, Augusta. Address G. F. Noel, D. O., secretary, Board of Osteopathic Examination and Registration, Monument Square, Dover-Foxcroft.

MARYLAND

Examinations in October. Address Walter H. Waugaman, D. O., secretary, Board of Osteopathic Examiners, 33 S. Centre St., Cumberland.

MASSACHUSETTS

Examinations November 14. Address George Schadt, M. D., secretary, Board of Registration in Medicine, State House, Boston 33.

MICHIGAN

Basic science examinations in October and in January at Wayne University, Detroit, and University of Michigan, Ann Arbor. Address Miss Eloise LeBeau, secretary, Board of Examiners in the Basic Sciences, 101 N. Walnut St., Lansing.

MINNESOTA

Phil Morrison, Faribault, has been appointed as a member of the Board of Osteopathic Examiners.

Basic science examinations January 2-3 in Millard Hall, University of Minnesota, Minneapolis. Applications must be filed a week in advance. Address Raymond Bieter, M. D., secretary, Board of Examiners in the Basic Sciences, 126 Millard Hall, University of Minnesota, Minneapolis 14.

NEBRASKA

Basic science examinations January 9, 10 at University of Nebraska College of Medicine, Omaha. Applications must be filed 15 days prior to the examination. Address Mr. Oscar F. Humble, Director, Bureau of Examining Boards, State House, Lincoln.

NEVADA

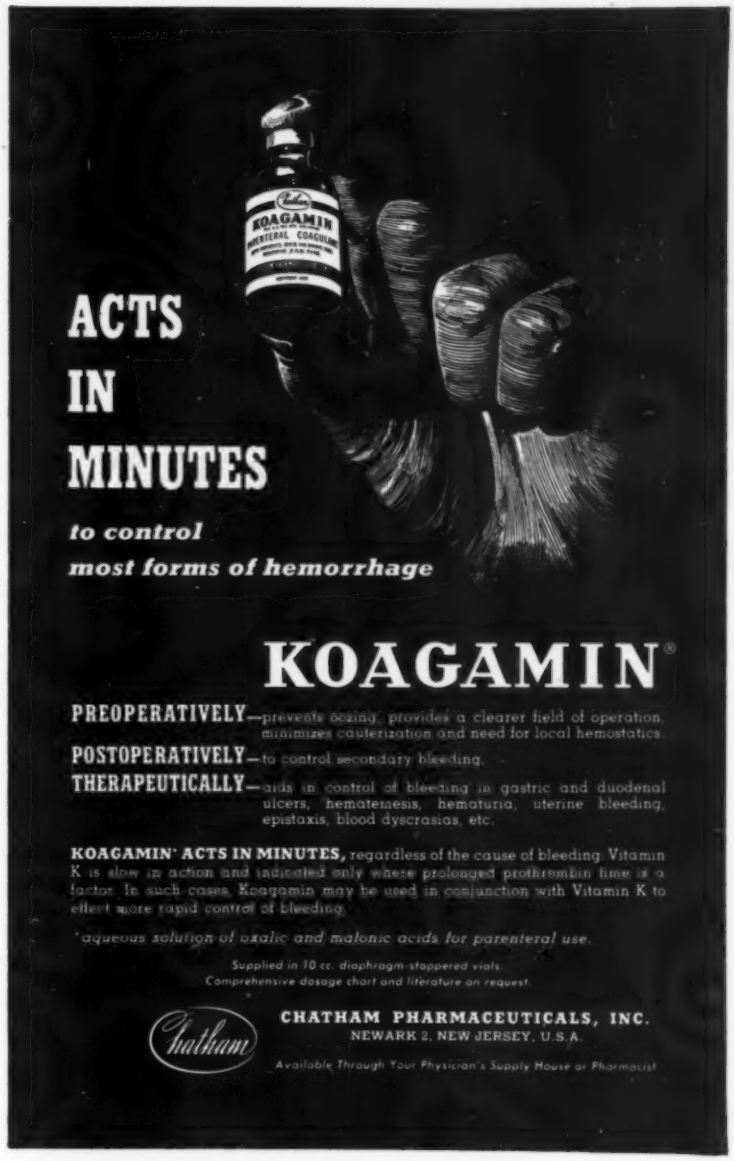
Examinations January 9. Address Walter J. Walker, D. O., secretary, Board of Osteopathic Examiners, 210 West Second St., Reno.

NEW MEXICO

Basic science examinations November 5. Address Miss Marguerite Kilkenny, Assistant Secretary of State, c/o Office of Secretary of State, Santa Fe.

NEW YORK

Examinations January 30-February 2. Applications must be filed by January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15. Address Jacob L. Lochner, Jr., M. D., secretary, Board of Medical Examiners, State Department of Education, 23 South Pearl Street, Albany 7.

Donald B. Thorburn, New York City, has been reappointed to the Board of Medical Examiners for a term of 3 years.

NORTH DAKOTA

Examinations January 2. Address Gordon L. Hamilton, D. O., secretary, Board of Osteopathic Examiners, 6-10 Kresge Bldg., Minot.

Dr. Hamilton was newly appointed to the Board for a term expiring June, 1951.

OHIO

Examinations the first week in December. Applications should be filed by November 21. Address James O. Watson, D. O., Osteopathic Examining Committee, 114 West Third Avenue, Columbus 1.

OKLAHOMA

Examinations November 9 in the Skirvin Hotel, Oklahoma City. Applications must be filed 15 days prior to the examination. Address Kendall E. Rogers, D. O., secretary, Board of Osteopathy, 804 First National Bank Bldg., Oklahoma City 2.

OREGON

Professional examinations in January at Portland. Address Mr. Howard I. Bobbett, executive secretary, Board of Medical Examiners, 608 Failing Bldg., Portland.

Basic science examinations December 2. Applications should be filed by November 15. Address Charles D. Byrne, Ph. D., secretary, Board of Higher Education, Eugene.

RHODE ISLAND

Professional examinations January 4. Basic science examinations November 8. Applications for the basic science examinations must be filed by October 25. Address all communications to Mr. Thomas B. Casey, Administrator of Professional Regulations, State Office Building, Providence.

SOUTH CAROLINA

Examinations November 21 in Columbia. Applications must be filed by November 6. Address E. W. Pratt, D. O., secretary, Board of Osteopathic Examiners, 6 Glebe Street, Charleston 6.

SOUTH DAKOTA

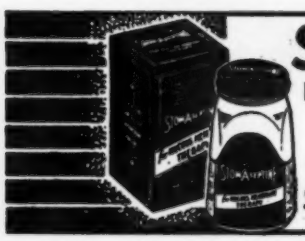
Basic science examinations December 1 and 2 at the Medical School, University of South Dakota, Vermillion. Applications should be filed by November 20. Address Gregg M. Evans, Ph.D., secretary, Basic Science Board, Yankton College, Yankton.

TENNESSEE

Examinations are held on the second Wednesday in February and the last Wednesday in July at Nashville. Address M. E. Coy, secretary, Board of Examination and Registration for Osteopathic Physicians, 1226 Highland Ave., Jackson.

TEXAS

Professional examinations November 9-11 at the Blackstone Hotel, Fort Worth. Applications must be filed by October 30. Address M. H. Crabb,



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VERMONT

Examinations in January. Address Charles D. Beale, D. O., secretary, Board of Osteopathic Examination and Registration, Mead Bldg., Rutland.

WASHINGTON

Professional and basic science examinations in January. Applications for the basic science examinations should be filed 30 days in advance. Address all communications to Mr. Robert L. Smith, Director, State Department of Licenses, Olympia.

WISCONSIN

Professional examinations January 9 in Madison. Address C. A. Dawson, M. D., secretary, Board of Medical Examiners, River Falls.

Basic science examinations December 2 at the Plankinton House, Milwaukee. Applications must be filed by November 25. Address Professor William H. Barber, secretary, Board of Examiners in the Basic Sciences, Ripon College, Ripon.

RE-REGISTRATION OF OSTEOPATHIC LICENSES

October 31—Pennsylvania, $3.00. Address Mrs. Sara H. Longstaff, secretary, Bureau of Professional Licensing, Harrisburg.

November 1—Missouri, $2.00. Address F. C. Hopkins, D.O., secretary, State Board of Osteopathic Registration and Examination, 203 S. 6th St., Hannibal.

During December—District of Columbia, $2.00. Address Daniel L. Seckinger, M.D., secretary, Board of Examiners in Medicine and Osteopathy, Health Department, Commission on Licensure, East Municipal Bldg., Washington.

January—Alberta. No reregistration. Pay $10.00 a year membership in College of Physicians and Surgeons, Alberta.

During January—Connecticut, $2.00. Address H. Wesley Gorham, D.O., secretary, Osteopathic Examining Board, 520 West Avenue, Norwalk.

During January—Minnesota, $2.00. Address George F. Miller, D.O., secretary, Board of Osteopathic Examiners, 601 Dayton Ave., St. Paul 2.

During January—Wisconsin, not more than $3.00. Address C. A. Dawson, M.D., secretary, Board of Medical Examiners, River Falls.

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Beaumont, Katherine Myers, from 827 Morgan Bldg., to 2126 N.E. Eighth Ave., Portland 12, Ore.

Beck, Daniel B., from Chicago, Ill., to Maywood Hospital, 4400 E. Slauson Ave., Maywood, Calif.

Bigsby, Glenn E., from 516 Main St., to Box 176, Coon Rapids, Iowa

Borman, Richard H., from East Cleveland, Ohio, to North Jackson, Ohio

Boyd, Thomas F., Jr., KCOS '50; 100 Fourth St., Monett, Mo.

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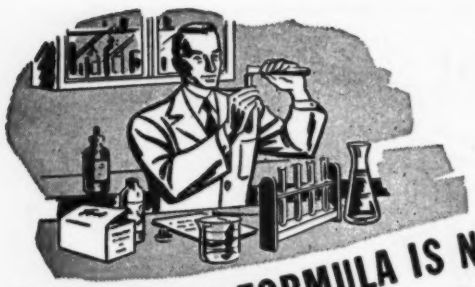

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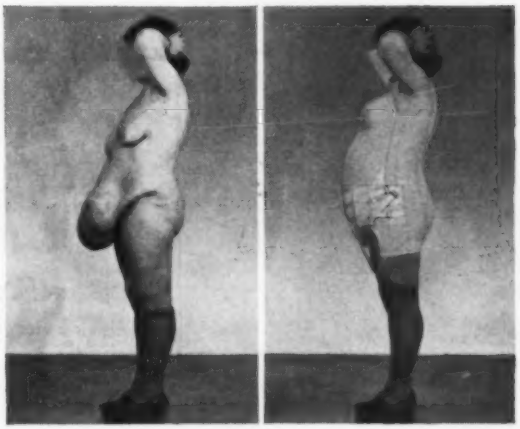

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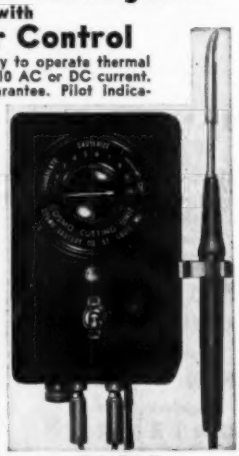

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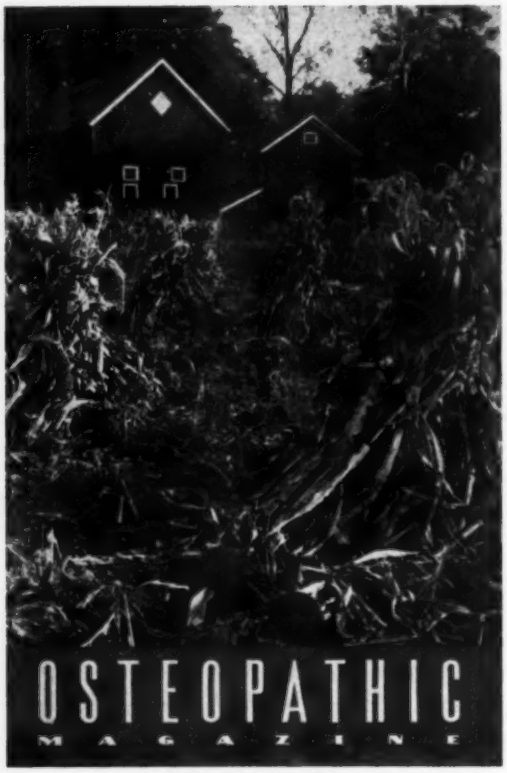

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